The Builder.

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On the Northern Coast of Cyprus.

THE northern district of Cyprus, which consists of the Kyrenea mountains and the Cape St. Andrea peninsula, forms a straight coastline of about ninety miles in length, indented with insignificant little bays, and the only harbour which seems ever to have been constructed on its shores is the small and, at the present day, practically useless one of Kyrenea (otherwise called Tzerinia).

The monumental remains of this district are remarkable for their variety in age and style. Many of them are merely interesting as historical landmarks, such as the prehistoric and Hellenic cemeteries, but there are also mediæval buildings surviving of a very special artistic interest. The Castle of Kyrenea (Figs. 1, 2) is one of the most imposing fortresses of the Levant, even in its present dismantled condition and in spite of its degradation to the use of a convict prison. The great mediæval château and fortified palace of Hilarion is one of the most remarkable souvenirs of the XIVth century in that semi-Oriental land of romance, where the vestiges of the Crusades and the traces of an evanescent Arab art are to be found on every hand.

The peninsula is perhaps more remarkable for possessing a series of curious Romanesque churches of the XIIth century—evidently the remains of an early colonisation from the Syrian mainland during the Latin kingdom of Jerusalem.

Kyrenea may be considered the centre of the district. On landing in its disused, silted-up port the traveller finds himself within the enceinte of a little town, but one from which all traces of the Middle Ages have disappeared with the exception of the wall on the western side, and its outline on the southern as defined by the massive corner tower, and by a few ruined archways surrounding the quay. The little port was slightly enlarged some years ago by the English Administration, but, owing to difficulties, the work was never completed, and the fragmentary traces of the older port of possibly Byzantine times still remain visible. Bases of two towers, which probably formed the "gate" of the harbour—a chain being stretched between—can still be identified.

The great castle of Kyrenea was completely transformed by the Venetian Government in the course of the XVIth century. During this period almost all the serviceable mediæval fortifications belonging to the Serene Republic were more or less adapted to the changing conditions of warfare. Crossbows were giving way to arquebuses, and the use of artillery for siege purposes was rapidly developing. The Turks are credited with being almost the inventors of siege guns on a large scale, and certainly they originated the modern system of mobile armies of a type quite different from the levies of feudalism. The Italian republics were the first amongst European states impelled by force of such circumstances to provide against the impending Asiatic aggression which threatened to overwhelm Europe at the close of the Middle Ages.

In adapting the obsolete castles of the Middle Ages to the use of artillery, the Venetians simply added to their almost invariably square outlines a thick coating of earthwork supported by an outer wall of masonry. On this thickened wall there was space for a battery within embrasures, and the angles of the work were furnished with circular towers to contain the heavy guns flanking the curtain. In the case of Kyrenea Castle the whole square of the castle was replanned to constitute, as it were, an immense bastion flanked by the two round towers, one at the north-west corner, the other at the south-east, against the only quarter from which an attack could be feared—the south-west. A small bastion of regular form was constructed at the south-west corner in addition, although its purpose is not very apparent.

Kyrenea Castle is the largest example of this peculiar treatment in Cyprus. The work of remodelling would appear to have been executed previous to the year 1544—a date inscribed on its western side. The much higher wall on the side facing the town, and perhaps the south-east tower, belong to a still later date, when the fortifications of Famagusta and Nicosia were being hastily prepared immediately before the great Turkish invasion. But at the period when Cyprus was gained by the Mohammedans and lost to Christendom a fresh development in artillery had

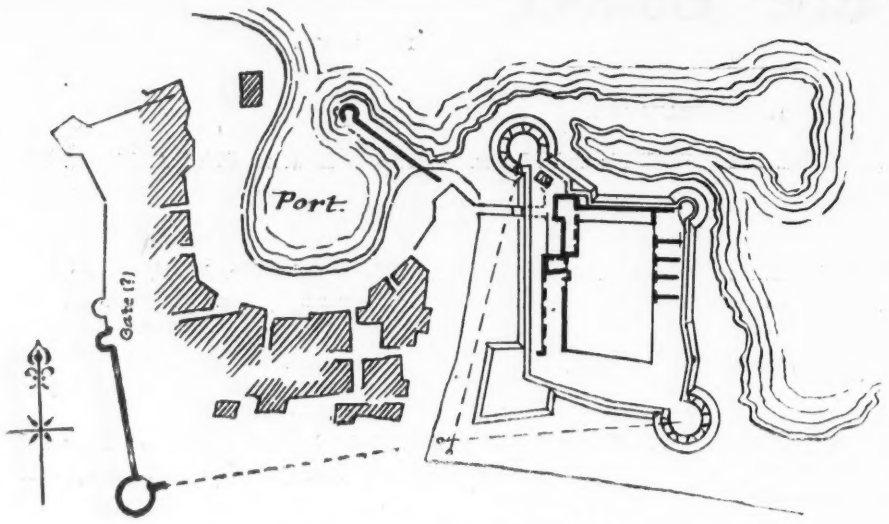

Fig. 1. *Sketch Plan of Kyrenea and its Castle.*

brought about a revolution in the idea of fortification. Earthworks pure and simple—much like those of the present day—were coming into use, and the mighty stone walls of Kyrenea were deemed useless by the Venetian engineers commissioned to report on them in 1565.

The mediæval interior of Kyrenea Castle is much more ruined than that of Famagusta or the small mediæval fort of Limasol, both of which fortresses were treated in a similar manner by adding immense earthworks supported by stone facings. At Kyrenea the great wall facing the sea is still intact, crowned with its remarkably preserved battlements of the XIIIth century. But on the other three sides of the enclosure little is to be seen but the rugged walls and broken arches of what were at one time the evidently sumptuous apartments of a royal château. More especially on the western side the traces of a magnificent upper story remain. Here massive corbels, which must have supported an outer gallery and corner turrets in the well-known style of the south of France, still survive. The royal apartments of this upper story were levelled at the time of the conversion of the mediæval castle into an earthwork of the XVIth century, but their traces remain sufficiently apparent at the present day to allow of a chapel with southward pointing apse being made out.

The main entrance of the castle seems to have passed beneath the "royal apartments." Over this entrance are some large windows, now blocked, which seem to have overlooked a barbican. This outer defence of the castle was swept away when the alterations of the walls took place during the XVIth century. In remodelling the walls of the fortress the Italian engineers enclosed an old chapel which stood outside, at the base of the north-west tower of the mediæval castle (Fig. 3). This chapel happened to come within the lines of the Venetian modifications of 1544, and, instead of being swept away, it became embedded in the fortifications—an almost unique case of the kind perhaps. At the present day its cupola has fallen in, and it has become a mere ruin; on the floor are remains of a rich marble pavement in the Venetian style.

The castle of Kyrenea is still an interesting relic of the historic past, although the ordinary visitor finds it difficult to trace the vestiges of its once palatial splendour amidst the degraded associations of a Levantine prison. Internally it is but a ruin, externally it still presents in great completeness the aspect of the early artillery fortress of the XVIth century on the largest scale. Kyrenea is the centre of the eastern portion of the Kyrenea district. From the little town a road leads due west to Acheripitou and Lapathos, a road which formerly passed beneath the solitary gateway of the town in its western wall. One of the semi-circular towers which flanked this gateway is still standing.

In the neighbourhood of Kyrenea the most celebrated monument is the Premonstratensian Abbey of Bella Pais. It is one of the most remarkable ruined monasteries in the world. Although abandoned by its original founders more than three centuries ago, the greater part of it still stands in remarkable completeness, such as would be difficult to parallel with a similar XVth century building in Europe. No trace of subsequent additions in the later styles of art, marking its adaptation to the needs of even the XVIth century, interfere with its mediæval character. In a sense, it is almost intact as it was abandoned by its original occupants. The monastic institution had fallen into complete decay long before the Turkish invasion, and the Venetian Government took steps to suppress what had become a religious scandal.

The abbey was evidently built as we now see it during the latter half of the XIVth century. Its foundation was much older, but, like so many monastic institutions in Europe, especially those of the Benedictines, the buildings were rebuilt on the eve of impending decay and dissolution. Possibly the approach of disasters to which Cyprus was subject in the XVth century may have induced the investment of hoarded funds in new buildings.

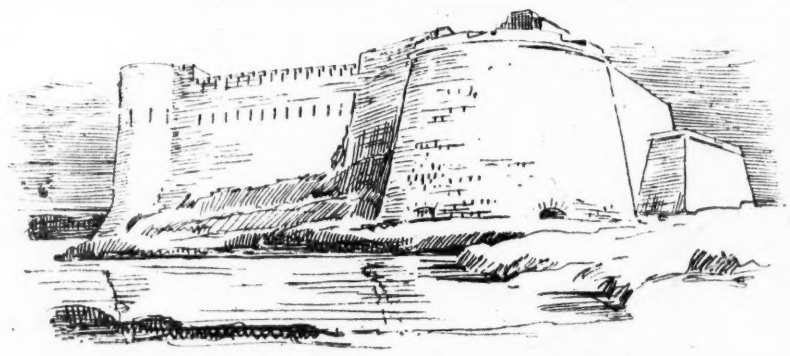

Fig. 2. *Kyrenea Castle from the N.W.*

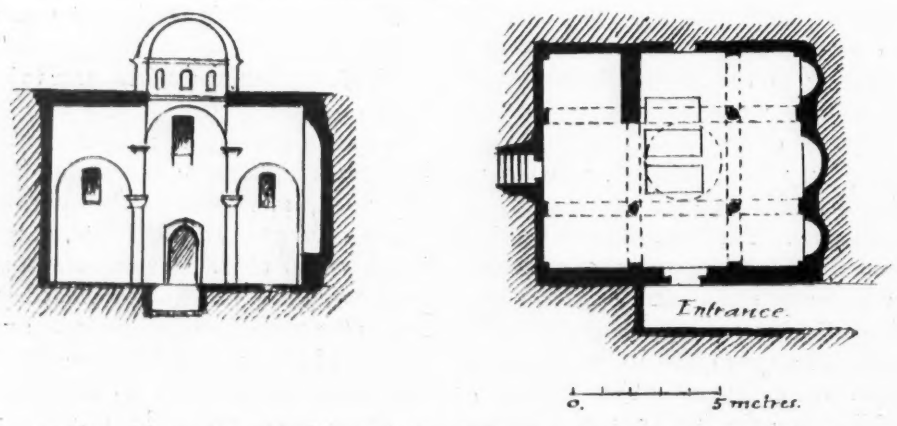

Fig. 3. *Ancient Church enclosed within Earthwork Additions to Kyrenea Castle.*

At the present day the portions of the abbey best preserved are the refectory, with its splendid undercroft on the north of the cloister garth, and the monastic church on the south, with its porch or narthex and certain attached chapels. It seems almost probable that the lodging for the abbot, designed to occupy the western side of the quadrangle, was never actually built, as hardly a trace even of the foundations of this portion of the building exists. The eastern side of the cloister is bounded by the ruined dormitory of the monks. This magnificent apartment, with the chapter-room and "commons" beneath it, is quite complete, with the exception of the vaulted roofs of both stories, which have disappeared in some earthquake ages ago. The side walls, with their windows and cupboards, etc., marking off the

cubicle divisions of the dormitory, are still intact, enclosing a space overgrown with trees and jungle. The chapter-house was a square in plan, with a central column carrying the ribs of four quadripartite vaults, of which the wall corbels remain in fair preservation and exhibit an interesting series of XIVth century sculptures. The central column suggests the well-known characteristic of our English monastic chapter-houses.

To the east of Bellapais stands another monastery of a very interesting character. It is called "Antifonitissa," meaning, perhaps, "Our Lady of the Echo." Partly of Byzantine date, it has been much altered and added to in the Gothic style. M. Enlart, in his great work on the Gothic art of Cyprus, devotes some space to this little monastery, describing the Gothic porch as the finest specimen of the style now remaining in the island.

Fig. 5. *Byzantine "Para-ecclesia" or Roadside Chapel, Kormakiti.*

The church is of the square Byzantine form, covered by a dome—a plan which seems to have been common in Cyprus before the Byzantine-Gothic style was introduced. The interior is still covered with old frescoes, and the iconostasis is a magnificent specimen of the usual type of Levantine XVIth century wood carving. Father Stephen de Lusignan, in describing the different religious houses of Cyprus, mentions that of Antifonitissa as having been built by his grandmother, Isabella Perez, and that his brother died in it as a monk; it would, therefore, seem probable that in the XVth century this monastery was of the Latin Church, but the church is certainly of much older date than that of the historical grandmother.

Not far from Antifonitissa stands the monastery of Melandryna. Here there is but little to detain the student. A recent German traveller has given it as his opinion that the church occupies the site and is built out of the remains of an ancient temple—a very probable supposition considering the site and the character of the masonry. The village churches in this neighbourhood are being sacrificed to a strange mania for rebuilding. In no part of the world has there probably ever been such a destruction of venerable old churches, always picturesque if not necessarily architectural, as in Cyprus during the last thirty years of peace and plenty. The object in view—as far as can be judged by appearances—is a mere desire to have a *new* building in place of the venerable temple consecrated by the use of untold ages. The buildings which take the place of the old Gothic-Byzantine churches are certainly amongst the ugliest and most inartistic that the wit of man has hitherto invented. They consist invariably of a square chamber about 80 ft. by 30 ft. in length and breadth, covered by a stone barrel vault of pointed form. The supports to this vault are of the flimsiest, and in some cases these modern churches have come to grief, and the vault has collapsed as soon as the wooden supports within were removed. For architectural character these new churches depend upon some clumsily-imitated mouldings, keystones, etc., of the European "classic" kind, which are supposed to decorate the immense square openings for doors and windows piercing every available wall. Attempts at sculpture may be considered as faintly reminiscent of the Byzantine age, but in reality they are too rude and clumsy to admit of any criticism.

On the western side of Kyrenea, the great straggling village of Lapithos-Karavas has hardly any of its once numerous churches surviving the rebuilding epidemic. The monastery of Acheripitou is still, however, untouched, and the fine Gothic-Byzantine church nearer the sea, which may have been a village church, owes its preservation to its abandonment and to the disappearance of the village to which it once belonged. This church is parallelogram in plan, with a central space covered by a dome carried on four arches, two of which are against the side walls. The four central arches are carried on ancient columns from some classic temple. The interior is a particularly pleasing example of the style.

The convent of Sina or "Sinai" (Fig. 4), perched on a steep hill at the western end of the Kyrenea range, is interesting from many points of view. It belongs to the great convent of the same name

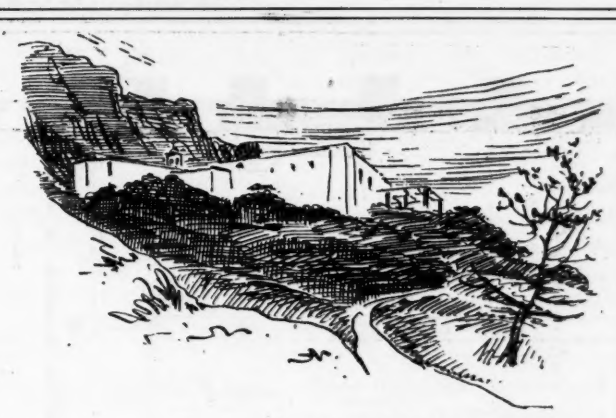

Fig. 4. *Monastery of Sinai.*

in Arabia, and enjoys exemption from the ordinary conditions of the native church of Cyprus. On this account it might have been hoped it would escape the general destruction of such monuments at the present day. But, alas! this interesting little building, possessing a singular chapel in the Gothic-Byzantine style, has recently been subjected to the prevailing fashion and the chapel is rebuilt in "imitation" of the original. The original would seem to have been designed with a curious barrel roof of timber with stone pointed arches following the timber outline and supporting it and the carved ceiling. The old building has now been swept away, and the modern substitute is decorated with fragments of its carved details and a new iconostasion resembling a shop front.

Within and around the monastery of Sinai are innumerable grey granite columns about 10 ft. high. These evidently mark the site of some important ancient building no longer in existence. The neighbouring village of Vasilia contains the traces of an imposing ruin, and this, in conjunction with the singular name "Vasilia," may suggest that possibly an important Byzantine palace as well as the monastery once occupied the site in days long before the Latin occupation of Cyprus.

Continuing westwards along the coast, the most important monument of art in fair preservation is the Maronite church of Kormakiti. It is simply a long nave with a barrel vault ending in an apse, but at the west end rises a very remarkable belfrey in two stories, the old west end and belfrey being about

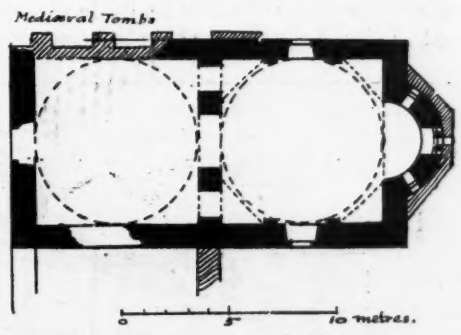

Fig. 6. *Plan of Ruined Church, Margi.*

35 ft. or 40 ft. high. The belfrey, reminding one of the Famagusta churches of the XIVth century, has two pointed-arch openings below and another of the same size above, all ornamented with the heavy boutel mouldings peculiar to the Cyprus style. It forms a remarkable

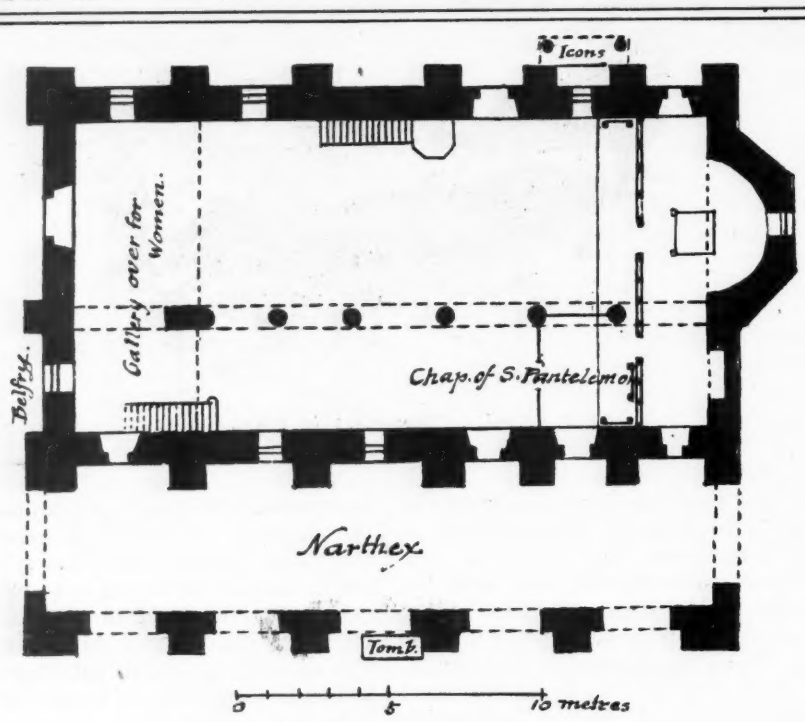

Fig. 7. Plan of Monastery Church, Myrtou.

landmark in this part of the island, and reminds the student very much of Normandy or even England. Here again the demon of destruction will soon be at work, and the Maronites are determined not to allow their orthodox neighbours to surpass them in efforts to obliterate the ancient history of the district as represented by the old village churches.

Although the Cypriotes have destroyed their old village churches wholesale of late years, they seem to have a singular superstition in preserving the ruins and the mere sites of what are called "paraecclesia," or what would be reckoned in Europe as wayside shrines and rural chapels. Numbers of these little buildings remain at cross-roads and in out-of-the-way places amongst the mountains, or linger as landmarks on the great plain of the Messaria. They have never, as a rule, been rebuilt, but are allowed to crumble away in an interesting state of decay, and their ruins often afford the most delightful study for an archæologist. Some few of these interesting buildings were once the parish churches of mud villages which have disappeared centuries ago, leaving these their only record. In the western part of the Kyrenea district there are many of these roadside shrines. At Ayios Yeorgios, near the coast is a well-preserved XVth century example, but roofless; near the village of Kormakiti, at the cross-roads is a small chapel in last stage of squalid neglect, but still possessing its frescoes on walls and vaulted roof (Fig. 5). But one of the most interesting of these ruins is the Byzantine church of Margi (Fig. 6), near Myrtou, built with the usual thin bricks and wide mortar joints and surrounded with external supports added in the Gothic period. This ruin must represent the monastic church of some important foundation, perhaps the original of the present Myrtou monastery.

The monastery of Myrtou is an important example of a modern Cypriote religious house. The range of buildings surrounding the monastic church in the usual parallelogram form is of no particular character. The church (Fig. 7) appears to be an ancient building more than once altered and enlarged. On its south side it has a curious arcaded loggia or narthex of imposing character—a feature which is often found in Cyprus churches of the last few centuries. Under the central arch of this loggia is the altar tomb of the person who built it, but the inscription has long since disappeared from the soft gypsum slab. Entering the church, the eye is attracted by a very venerable-looking arcade of squat columns with cushion capitals, which divides the interior into two naves in the way which is common in Cyprus churches. The northern aisle or nave has evidently been rebuilt with a greater width in comparatively recent times. At the end of the southern nave is a shrine protected by iron screens, forming what would be considered a side chapel in a Latin church. Within are wonder-working icons of S. Pantalemon, illuminated by little silver lamps and surrounded by all the somewhat *bazarre* adornments of the Orthodox Church, including some curious wax exvotos of human heads coloured to the life. Although some modern wood-carving has been added in recent years, much of the ancient woodwork (some mediæval) remains. The inscriptions on some of the icons would interest any student of mediæval Greek script. The ecclesiastical furniture of the monastery is remarkably rich. Chalices, hand-crosses, censers, and large quantities of richly-embroidered vestments are stored in the various cupboards within the church. Most of these ornaments are probably of European manufacture, as there is little trace of a local character. A curious silver tabernacle, used in the Good Friday service, representing a church with five cupolas, is evidently XVIIth century Venetian work. Externally the church possesses a picturesque belfry (Fig. 8), and an elaborate iconostasion for exhibiting icons to a crowd within the monastic courtyard. This latter feature is, however, comparatively modern.

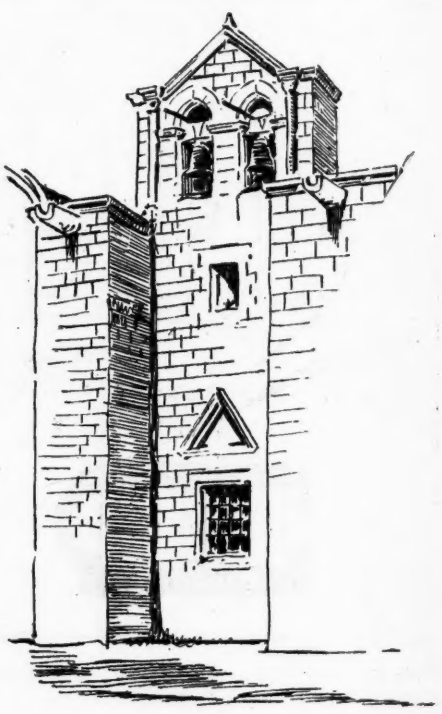

Fig. 8. Belfry of Myrtou Monastery.

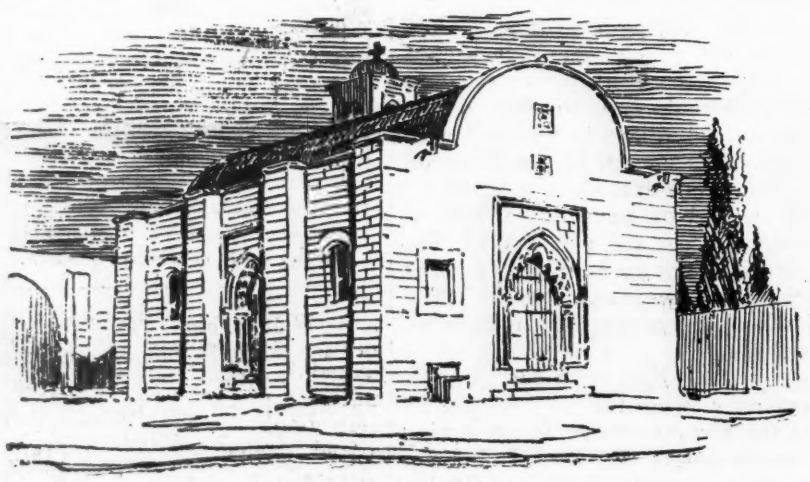

Fig. 9. Kathari Monastery.

The little monastery of Kathari (Fig. 9), a few miles to the east of Myrtou, is well preserved with the exception of the church interior, which has been completely cleared of all its ancient furniture. Externally the church possesses three of those curiously characteristic Cyprus doorways, with the chevron moulding and heavy hoodmoulds of a square form enclosing their pointed arches. The monastery buildings of Kathari have never been completed; the buildings

are now turned to the use of a farmstead.

In this most western portion of the Kyrenea district the village churches have almost entirely disappeared. A very small example still survives at Kampyli, but its appearance of venerable antiquity is its only interest, as it possesses no architectural character. The hideous barn-like churches of modern days can be descried wherever a village shows in the landscape; their brilliant red roofs of "French" tiles and the inevitable attenuated campanile at one corner of the block recalling the general appearance of a small manufactory or mill with its chimney so characteristic of modern Europe.

NOTES.

The New London County Hall Scheme.

WE are glad to find that the London County Council seem at last to see their way to a possible site for their much-needed County Hall, and we think the Westminster site proposed has much to recommend it. It is somewhat alarming, however, to know that a design by the architect to the County Council is already made and hung up in the Council room. It is understood that the perspective view and outline plans of the proposed County Hall, which by courtesy of the Council we were enabled to see, are merely intended to show the possibilities of the selected Embankment site. It is to be hoped that such is the case, for there is much danger in making a pretty picture for the deliberations of a public body before the building is planned. We should have thought that general information as to the accommodation to be obtained would have been sufficient at this stage of the proposal. Public opinion will certainly not be satisfied by anything short of an attempt to obtain the finest possible building by a great architectural competition. This is an opportunity second only to that of the Houses of Parliament, and the most must be made of it. The site has frontages of 800 ft. to the river, 240 ft. to the bridge approach, and 760 ft. to Belvedere-road. The scheme indicates continuation of the St. Thomas's Hospital embankment, while a terrace formed by a projecting basement is provided for the use of members only. It will be at once seen that Somerset House has influenced this work of the Council's architect, Mr. W. E. Riley, and, further, the grouping and detail are also based on the great work of Chambers. The dignity and restraint of Somerset House, however, are missing. A large domed mass rises harshly in the centre of the river front, and two low cupolas are placed near the ends of the buildings, but set back from the fronts. The point of view in the picture is taken too close to the object, and gives the impression that the project is not well considered in relation to its environment. Some design in plan, as well as façades, is required for a great conception of this order. The growing importance of the London County Council, combined with the unique nature of the site, demands the best possible work that can be produced, and it is therefore to be hoped that a competition, or some other process outside the actual work of Spring Gardens, will be publicly instituted to bring this about.

Thames Flood Prevention.

RECENT rains have served to demonstrate the amelioration gradually being effected in the condition of the Thames valley by judicious improvements to the weirs on the upper reaches of the river. This result is largely due to the efforts of the Thames Floods Prevention Committee, by whom the Conservancy Board have been repeatedly urged to take measures for dealing with heavy rainfalls. Thanks to the construction of new weirs and the enlargement of existing works of the kind, water can be passed on from point to point with such facility that, whereas a few years ago 2 in. of rain would have involved serious flooding, it now causes little inconvenience to those dwelling near the river banks. Notable improvements have been made in the neighbourhood of Windsor, where the new weir enables the lockkeeper to let the water flow freely on to Datchet. To relieve that place a new tumbling bay has been constructed at Old Windsor, while lower down Bell Weir is in course of being remodelled. Similar works, with equally beneficial results, have been carried out higher up the Thames, and it seems at last that the disastrous floods that once were so frequent will be almost entirely prevented. While fully admitting the good work performed by the Thames Conservancy, we must once more say that, in addition to the improvement of regulating works, reservoirs for the storage of flood waters are still urgently required. Besides their usefulness for purposes of control, such reservoirs would be of immense economic value to the inhabitants of the valley and of the Metropolis.

Electric Traction.

MR. B. J. ARNOLD'S presidential address to the joint meeting of the American and English electrical engineers at St. Louis was discussed at the Institution of Electrical Engineers this week. The subject chosen by Mr. Arnold was the problem of the alternating current motor applied to electric traction. Although he did not anticipate that the steam locomotive would become obsolete as rapidly as horse tramways did in the United States, yet, since it can be demonstrated that suburban traffic can practically always be worked more economically by electricity than by steam, it was certain that the electrical equipment of railways would now take place rapidly. The New York Central and the Pennsylvanian Railways alone were expending nearly seventy million dollars in equipping portions of their lines electrically. The recent great improvements in the design of alternating current motors was perhaps the main factor in the rapid development that was taking place. In this connexion Mr. Creedy's paper on the alternating current series motor, which was read at the same meeting, proved of great interest. Unlike most of the papers read to the Institution, a serious attempt was made to grapple with the problem theoretically, as well as experimentally, and, in our opinion, this will make the paper useful both to those who have to design the machines and to consulting engineers who have to decide whether they are better or worse than other kinds of motor. Mr. Creedy's theoretical results practically agree with those published by Professor Blondel two years ago, and although in many points of detail they are open to criticism, yet, as his experimental results show, they are trustworthy in practice. The experiments were made in Professor Ayrton's laboratory at the Central Technical College, and the data obtained are of the greatest value to electrical engineers.

Stained Glass Window by Mr. Henry Holiday.

WE have had an opportunity of seeing one of three large windows, by Mr. Henry Holiday, to be placed in the large hall of the Museum at Preston, to represent Literature, Art, and Science in ancient Greece, ancient Egypt, and modern Europe respectively. The three windows form to some extent a feature by themselves, so that the eye will be able to take in the whole effect of the design. Their shape is oblong, somewhat high and narrow, as suited to a classic building. The present design is divided into three compartments, each occupying about a third of the height of the window. In the top section we have a group of the artists and scientists of ancient Greece standing and sitting about, after the manner of the Parnassus fresco by Raphael in the Vatican. In the centre is a free representation of the Panathenaic procession of the Parthenon frieze, youths on horseback riding from left to right. In the lowest section, as centrepiece, is a standing group of the three great poets, Æschylus, Sophocles, and Euripides, and at the sides two green bronze statues of Sappho and Homer. A severe classic note is obtained by the architectural setting of the pictures, a scheme of Ionic columns and antefixæ in silvery white. Another decorative feature introduced is a festoon which crosses the centre panel about the level of the horses' legs. There is much fine virile drawing in this window, and the group of poets may be mentioned as particularly fine, strongly reminiscent of figures in the Raphael "School of Athens." There is also some very good colour, and the total colour effect is satisfactory. This is eminently an example of a stained glass window made to emulate fresco, full and free in treatment; and in a classic building this is not only legitimate but almost necessary. There is very little white glass introduced, and the high lights are in a prevailing greenish tone. This and the green of the festoon and the darker blue-green of the bronzes sets off the rich blue of the sky in the pictures and the touches of bright orange, ruby red, and purple. The artist is to be congratulated on a fine piece of work.

Exhibition of Furniture, etc.

MESSRS. ELMDON & Co. have an interesting exhibition of furniture at the hall of the Alpine Club. The furniture is designed by Messrs. Charles Spooner and Arthur J. Penty; and at the same gallery may be seen metal work by Mr. Edward Spencer, exhibited by Mr. Montague Fordham, and textiles by Mr. Edmund A. Hunter. A great part of the furniture is of plain oak, in that style of severe simplicity which is now so widely admired. Some of the happiest and most striking features of the designs

arise, as in all good design it so often happens, from the thoughtful treatment of problems of practical utility. A good example of the felicitous results which may be so obtained is to be seen in the bottom rails of the oak gate-leg table. These are so arranged, without any rapid curvature, as to tie the middle six legs together in the most effective possible way without greatly obstructing the foot room of those who sit at the ends of the minor axis of the elliptic table—an advantage which anyone who has used gate-leg tables of the old-fashioned type will know how to appreciate; and from an æsthetic point of view the rails thus treated are the most successful feature of an always charming design. In all the oak furniture, however, we fancy that the characteristic doctrine of rounded edges, also essentially utilitarian, is too largely prevalent; it sometimes contributes to a feeling of insipidity, a lack of crispness, in the total effect; it suggests the reflection that, wherever else glass-paper is used, such rounded edges at all events would be better left straight from the cutting tools, as they so often are in old woodwork. Another reason, doubtless, for this occasional feeling of insipidity is that Austrian oak has always been used in preference to the harder and more vigorous English variety. The latter is, of course, the more difficult and expensive to work, but the difference in surface and texture between the two varieties may be easily recognised at a distance equal to the length of a large room. Besides the plain oak, there is a considerable amount of furniture in polished mahogany—two large book-cases, a very charming old-fashioned sideboard inlaid with ebony, a fine dining table, and a number of smaller pieces. There is also a very beautiful walnut cabinet inlaid with ivory, and there is some very useful-looking painted furniture of a less expensive kind. Mr. Spencer's metal work and Mr. Hunter's textiles are also well worth seeing and studying, and contribute very much to the total effect of the exhibition. Amongst the latter should be noticed especially the splendid peacock hearth-rug and the very beautiful *portière* of the "Forest" pattern, which is perhaps one of the finest things in the exhibition.

The Goupil Gallery.

WE have seen better exhibitions in this Gallery than the present one, though it contains many good works. In the ante-room we find one or two water-colours by M. Harpignies, whose water-colours, if he paints many of them, are at all events not often seen in exhibitions; No. 10, "After Sunset," is a beautiful little work. M. Hervier's "The Farmyard," the largest picture in the ante-room, is a dingy and unattractive piece of pigment-plastering; M. Weiss's "A Silvery Day, Normandy" (3), if it does not answer to its title (for painters of this school cannot really produce anything bright and sunshiny, whatever titles they may give), is a fine work of its school. Among the other contents of the ante-room are two fine black-and-white studies by M. Lhermitte (35, 36), two figure sketches by M. Cremona (8 and 12), which are thoroughly bad style, and one of poor Georges Michel's unmistakable and powerful landscapes, "Windmills" (14). In the large room the central picture is one of Israels' sad and depressing cottage interiors with worn-out and melancholy peasant figures; one is beginning to think that it is possible to have enough of these; the artist produced some works of great pathos and of grand artistic effect in scenes of this class; but when treated with less of artistic effect they tend to degenerate into squalor, which is not in itself a subject for art. There are some beautiful small works by M. Harpignies in this room, especially "The Lake" (52); an admirable little picture by Mauve, "Carting Sand" (56), showing that he could draw horses quite as well as sheep; a very fine little picture by J. Maris, "Canal in Holland" (57); one of M. Jacque's powerful but rather loaded tree-pictures, "Under the Old Oaks" (69), which may be characterised as Rousseau with the "go" taken out of him; a very fine example of Mr. Mark Fisher's work (77); another and also fine landscape by Michel, and a brilliant flower-piece by Fantin-Latour.

The late Constantin Meunier.

BY the death of M. Meunier the world of art loses a sculptor who stood rather alone as the illustrator in sculpture of the artisan and the labourer; he may be said, in fact, to have been in sculpture somewhat what Millet was in painting, though he never reached the pathos and sentiment of Millet. The class of subjects which Meunier dealt with is not, in our opinion, specially suitable to sculpture, which is essentially an art of the abstract and the ideal; but Meunier had the insight to perceive (as far as his usual practice was concerned) that subjects of this class were best treated on statuette scale, in which the realism of dress, etc., is not forced upon one too violently; and his small bronze figures were always treated with vigour, simplicity, and a total absence of anything like pretentious or theatrical effect. As efforts to render real life in sculpture they will always have their value.

Clock Tower, St. George's-circus, Southwark.

MESSRS. THOMSON & POMEROY, of Wimbledon, have been appointed advising architects and assessors in respect of the designs submitted for a clock tower to be erected upon the site of the Obelisk at St. George's-circus. The competition is limited to architects practising within a radius of twelve miles from the circus. The obelisk, a block of limestone, was set up in 1771, and bears the name of Alderman Brass Crosby, elected Lord Mayor in 1770, who was committed to the Tower for releasing a printer of the Parliamentary debates who had been illegally arrested by an order of the House of Commons, and for imprisoning a messenger of the House. The obelisk marks the meeting-point of five main roads laid out through St. George's-fields, at a spot which, as it records, is distant one mile from Westminster Hall, 1 mile 40 ft. from London Bridge, and 1 mile 350 ft. from Fleet-street. It stands on the property of the Bridge House Estates Committee of the Corporation, who agreed to the removal of the old land-mark by the Southwark Borough Council, subject, with other conditions, to its re-erection by them elsewhere and to the Committee's approval of the design of its successor. The proposed clock tower is the gift of a firm of tobacco merchants trading in the Borough.

THE SOCIETY OF PAINTERS IN WATER-COLOURS.

AT the exhibition of the Society of Painters in Water-Colours the central position at the top of the room is worthily occupied by one of the best things Mr. E. R. Hughes has exhibited there—"Wings of the Morning" (78). It represents a nude winged female figure flying across through the sky, her beautiful head in bright light; her limbs go into the shadow behind her, into which birds of night fly back from her presence, while in front she is accompanied by a whole crowd of bright birds and flowers going through the air with her. The figure is most conscientiously drawn and finished, and the whole work is equally good both in the technical and in the poetic sense.

The exhibition as a whole is full of interest and variety, to an even exceptional extent. As usual, the landscapes have the best of it, for water-colour is essentially a landscape art, and there are figure pictures which are highly finished but not interesting. Among the exceptions is Mr. F. Cadogan Cooper's "Molly, Duchess of Nona" (5), a figure from one of Mr. Hewlett's novels. This is a seated figure of a mediæval Italian lady clad in a gorgeous dress of blue and yellow, backed by a vertical crimson screen between her and the daylight, at the side of which is a distant glimpse of green undulating country and white towers, quite in the manner of a background to an early Renaissance picture; the whole thing is in fact slightly archaic, but it is an excellent piece of work. Mr. Robert Little appears this year as a painter of interiors with figures; "The Tudor Window Seat" (51) is not very interesting, but the study of an interior with a seated figure of a man working, with his head in bright light—"The Lathe" (89), is a most effective study which makes one think of Rembrandt. Miss Fortescue-Brickdale is always interesting and original, though her "Hope dieth, Love liveth" (53) is not perhaps one of her greatest successes; it shows two standing figures closely grouped together, a young woman clad in mourning, and behind her and half hidden by her the nude figure of Love, whose wings make two great crimson crescents above. It is a design that would work out well in stained glass or as a mural decoration on a large scale. Miss Rose Barton has two of her delightful pictures of children; the best, "O Life, how pleasant is thy morning" (107), shows an interior with a very small child on tiptoe to look out of a window. Mr. Anning Bell's figure pictures are disappointing this year, since, though as fine as usual in colour and general design, two of them at least (17 and 25) show us such very unattractive personages; "The Daisy-Chain" (113), woven by two women in front of a fragment of Renaissance architecture, is more pleasing and is perhaps in every respect the best of his contributions. Miss Minnie Smythe's "Sad October" (85) is a rather melancholy idyllic picture formed by a mother and her two small children amidst autumn foliage; it gives the idea of being a study from life into which a certain poetic sentiment has been imparted by the artist; the treatment of the colour of the garments, which is very refined and artistic, serves also to remove the group from the plane of realism and give it artistic significance. Mr. Arthur Rackham's exceptional talent we have before fully recognised, but we nevertheless think that his works this year, more fantastic than ever in conception, are out of place in an exhibition of this high class. In his set of designs in illustration of Rip van Winkle he showed that sentiment and pathos are within his range; but his goblin pictures here are only very clever jokes; they would do splendidly for *Punch*, but we do not care to meet them in an art exhibition. Mr. Walter West sends one of his charming Quakeresses revolving before her writing-desk "A Weighty Consideration" (11)—not quite equal to some of his previous exhibits, but he is himself his most dangerous rival. One of the most satisfying figure pictures in the gallery is Mr. Arthur H. Marsh's "On the Links" (183); nothing can be simpler than the subject—a bare-legged girl in short skirts standing on

a high down, with her back to the spectator, about to take up her "washing" which is drying on the grass; there could hardly be less of a "subject," in one sense, but in Mr. Marsh's hands it becomes a quite complete and characteristic picture—a moment of life transferred to paper, with no detail admitted to interfere with its simple unity of effect. It is far more sensible to get a poetic impression out of simple life in this way, than to endeavour to make a subject poetic by giving it a fine name, as Mr. Tuke does in painting a nude model and calling it "Cupid and Sea-Nymphs" (60).

The first two works in the catalogue numbers are two very bold sketches by Mr. Sargent, "Palazzo Grimani" and "The Bed of a Torrent"; the first a very effective architectural sketch, the second a rapid study of stones in the bed of a stream. As to landscape generally, we have as usual nearly all grades in the reading of landscape, from the realistic handling of Mr. Pilsbury to the blottesque suggestions of Mr. Paterson, whose "Nameless Hills" (123) may well be nameless, inasmuch as they are formless also. This is carrying the revolt against realism to an extreme which defeats its own end. Mr. North's "By Severn Sea" (20) is not nature either; it is a fairy dream of light and colour which exists only in the artist's mind; but it is distinctly made out; we can see what is intended. Mr. Pilsbury, to whose more realistic landscapes we have just referred, does the thing so well and so conscientiously that one is almost persuaded that there is more poetry in his art than appeared at first sight; at any rate he goes on improving, and from his point of view of the treatment of landscape he is always satisfactory. Still, this is not all that landscape in water-colour is for. Mr. Robert Little, in "Gateshill" (109), shows us the broader and more poetic way of treating nature, though with a little too much insistence of the artist's own individuality; *i.e.*, it is not so much nature as Mr. Little's view of nature. This does not make it less interesting, but it is slightly one-sided. The perfect balance between truth to nature and the expression of personal feeling is seldom attained in landscape-painting. We find it here in the works of Mr. Eyre Walker more perhaps than in those of any other exhibitor of the present year. His "On the Wye" (43) is a perfectly recognisable scene, it is realistic so far; but if one wants to recognise the difference between realism with poetic impression and realism without that element, compare it with the Bettws-y-Coed picture near it (No. 41), and the contrast is instructive. The latter is an admirably executed drawing; but it is all finish of execution *et præterea nihil*. "The Valley of the Wye" (155), another of Mr. Eyre Walker's landscapes, is still finer; perhaps the finest in the room; and another remarkable work by the same artist is "Aysgarth Force in Flood, at Night" (146)—remarkable especially in this, that the artist, in portraying a night effect, has resisted the temptation to put in any more detail than could really be seen at night; it gives an actual effect of a roaring torrent just perceptible in the darkness. Usually all so-called moonlight or night effects in landscape are spoiled by inserting more detail and colour than could really be seen under the circumstances. Mr. Colin B. Phillip's two works, "Frosty Day after Storm, Barmouth" (152) and "After Sundown on a June Evening, near Arisaig" (158), are each a study, as the titles imply, of a special effect of light and atmosphere, and both are fine and interesting works, though not equal to the best their author has produced. Of Mr. Cuthbert Rigby's contributions, all good, "The River Rothay" (148) may be specially mentioned for its fine and effective composition. Among others not to be passed over are Sir E. Waterlow's fine broad painting of "The River Coquet at Warkworth" (66); Mr. Goodwin's "The Last Act and Fall of Curtain, Pompeii, A.D. 79" (29), the most important of his works this year, a scene in the arena during the eruption of Vesuvius—a little too like John Martin over again; Mr. R. W. Allan's bright scene in a Scottish fishing-port—"Home and Rest" (129); Miss Martineau's "A Flowery Path in the Highlands" (164), an excellent piece of landscape composition; Mr. Tom Lloyd's little evening scene, "The Last Waggon" (166); Miss Rose Barton's "Under the Shadow of the Church" (198), a curious experiment, in which the church is only seen in its reflection in the pond; Mr. Eyre Walker's remarkable little bit of composition, "On the Edge of Exmoor" (215); and Mr. Herbert Alexander's "The Picnic" (42), a little picture made out of a sloping horizon of green hill and a sky above it.

Architectural subjects are tolerably numerous; among these, as usual, Mr. Reginald Barratt is pre-eminent; of his various works perhaps the very best is the "Mill, Volendam" (98), but we much admire also "The Great Church, Dordrecht" (130), with its brick architecture bright in the sunshine. Mr. Goodwin gives a fine view of the theatre ruins at Taormina (256), in which we notice how well the texture of the architecture is conveyed without any hardness or undue emphasis of detail. Mr. Herbert Marshall has contrived to make a fine drawing out of "The Tower Bridge" (37), seen from one of the roads leading up to it, in the only way in which it can be made passable in a picture—viz., by giving the mass only and leaving the details in the obscurity of shadow; he has even omitted (and wisely) the absurd effect of the suspension chains ramping over the top of the approach gateway, as if supported by it; this would have formed the foreground object of his picture, and would have effectually spoiled it. He has a very good little picture, too, of "Notre Dame, Paris" (117), from a point of view from which it has often been painted. Mr. S. H. Hodson's "The Houses of Parliament" (190) is a correct and carefully studied architectural drawing, but hardly a picture in the true sense of the word. Among architectural subjects may be classed Mr. H. Alexander's drawing of "The Horses of St. Marks" (238), perhaps the best study of those famous quadrupeds that we remember to have seen.

Had we space to mention all the works that interested and pleased us, the list would have been a good deal longer. There is no annual exhibition in London where the numerical proportion of really interesting works is so high.

MAGAZINES AND REVIEWS.

THE *Art Journal* illustrations are very largely occupied with decorative work. In an article by Mr. Rix on "Modern Decorative Wares" the author admits that all has not been done that might be done with decorative ware in modern times; and he thinks, perhaps rightly, that this failure is in part because too little importance is now attached to its true position as a decorative accessory. "The utmost care and thought are lavished on the architectural details of the home—the metal fittings, hangings, and wall treatments; but the pottery, which should give an accent of colour harmonising with the design and general effect of the surroundings, is often left haphazard to the untutored selection of some wholesale furnisher." A coloured print of some vases produced by Messrs. Doulton shows some fine work as mere colour, or with a decorative surface design which is only just hinted at; and this kind of work represents no doubt one of the functions of ware of this kind—to supply a note of rich colour in a room. Some of the engraved illustrations have the effect—in black and white at all events—of being too strongly marked and *prononcé* in character. Mr. Harold Rathbone's two plaques in the style of Della Robbia are good in their way, but it is rather archæological art. An article on "The Liverpool School of Art" shows in its illustrations some clever examples of decorative design. Mr. D. Croal Thomson writes a jubilation on the recent Whistler Exhibition, in respect of which he says (and evidently finds) that "it is not easy to write in temperate language about the acceptance of a great artist amongst the immortals by the majority of the artistic community." If Mr. Thomson lives twenty years he will find that he was too previous in supposing that what art-critics now say about Whistler is the last word. Mr. Thomson is exultant over the unanimity of the daily press; and certainly when art-critics of the daily press of this country do agree their unanimity is wonderful: but then what is it worth? It merely arises from the fact that what is called art-criticism is now the work of a clique who all take the same impulse at the same moment. We declined to join in the general cry, and our impression from conversation with those who do not perhaps call themselves art-critics, but who represent the general opinion of thoughtful people, is that our own view is after all the prevalent one, only few of those who hold it write about art. In the first article in the number Mr. Claude Phillips discusses the question of the authenticity of a "Philip IV." by Velasquez which has been lately purchased for the Fine Art Museum at Boston, U.S.A., and over which doubts have been raised by some experts in the work of Velasquez. The faith of the Boston owners of the picture is not, however, shaken, and Mr. Phillips confirms them in it as far as he can judge from the photographs supplied, one of which is reproduced.

In the *Burlington Magazine* Mr. F. Lathrop treats of the same subject, and sums up decisively in favour of the authenticity of the picture. In the same number Mr. M. H. Spielmann writes a short and forcible article on the desirability of establishing in this country a Ministry of the Fine Arts, an idea with which we need hardly say that we are entirely in agreement. Mr. Starkie Gardner contributes an article on "Charles II. Silver at Welbeck" in the collection of the Duke of Portland, and most beautiful work it appears to be, from the photographed illustrations. An interesting point is that a good many of these are not solid chased silver, but a silver embossing on a vase or other object made of cheaper material. It is suggested that one reason for this method was not mere economy at the moment, but the fact that such works of art in thin silver were safer, as affording less food for the melting-pot when the court coffers ran low. Mr. Clouston, in his sixth article on "Minor English Furniture Makers of the XVIIIth Century," gives a sketch of the history of Robert and Richard Gillow, the founders of the firm of Gillows, with some illustrations of their original work, and fac-similes of a couple of the crude rough pen sketches in which the designs were made out.

The *Architectural Record* (New York) contains an article on and illustrations of a new building in (or, as the Americans say, "on") Broadway, New York, which is really worth attention. This is the National Park Bank, of which Mr. Donn Barber is the architect, and it is one of the best and most characteristic designs for a bank we have ever seen. It had been a question with the owners whether to find new quarters in a portion of one of the "skyscraper" blocks of offices, or to build their own premises as a separate structure. They decided on the latter, but then it was necessary that the façade should be of such a kind as not to be crushed and over-powered by the adjoining "skyscraper." The architect has solved the problem by treating the main portion of the front as a single great rusticated arch and window between rusticated pavilions, crowned by a powerful cornice; the whole forming the height of three stories of the adjoining building. Above the cornice is an attic treated in a lighter and more graceful style. The interior of the bank is of course unusually lofty (it is roofed by a dome which does not come into the exterior composition), but it is none the worse for that, and the exterior treatment gives exactly the right architectural expression of a bank. The other façade to Fulton-street is equally well treated in the same manner, but in less lofty proportion. It is a building on which we can sincerely congratulate its architect, who has succeeded in showing how a bank may be made bank-like without that employment of a large Order which has been for so long a kind of shibboleth of bank architecture.

The *Berliner Architekturwelt* devotes a photographic view and two plans to the Kaiser Friedrich Museum at Berlin, by Herr Ihne, a building which might well have claimed larger and more numerous illustrations, for it is obviously a very fine work. It stands on a nearly triangular plot, the acute angle of which is rounded off into a large sweeping curve of columns with an arcade between, and a dome behind, over the grand staircase, which is placed in this part of the plan. The axial line of the plan is continued through to another circular staircase hall which forms the central feature of the front on what may be called approximately the base of the triangle, but of the architectural treatment of this front we have no illustration. The plan is very finely arranged, in an architectural sense, and the exterior represents dignified and scholastic classic work. The various illustrations of new street fronts in Berlin present nothing calling for any special remark. A curious coloured plate of a decorative panel by Herr H. Dahmen is given, which consists of an illustration in colour of a rainy street under an avenue of trees in twilight, with lighted tramcars reflected in the wet road; a somewhat easy way of producing an effect. From two other illustrations in black and white it seems that Herr Dahmen's aim is to produce decorative pictures out of ordinary street and house groupings under special conditions of weather.

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In *Technics*, Mr. John B. C. Kershaw commences a series of articles which it is intended shall cover the whole of the ground relating to the theory and practice of steam generation. The writer very judiciously qualifies an announcement to this effect by the phrase "so far as limits of space permit." The present instalment is devoted to "The Raw Materials," and deals briefly with the calorific value of different forms of fuel, the quality of water for boiler feed purposes, and the importance of air as a factor in the steam-raising process. In discussing feed water, the writer wisely recommends the separation of impurities outside the boiler, deprecating the use of patent compositions and other chemical reagents in a way which, we may point out, practically involve the utilisation of the boiler as an imperfect form of water-softening apparatus. "Armoured Concrete" is the subject of a short contribution by Lieutenant Harry J. Jones (A.R.C.Sc.Lond.). This is merely an introductory article calling attention in general terms to the advantages offered by the new material, which, as we have before pointed out, should be designated "concrete-steel." Being a compound material, it ought not to be described as if it were a simple material armoured by another simple material. Those of our readers who are interested in electricity will find interesting matter in the articles "On the Electric Conductivity of a Vacuum," by Professor J. A. Fleming; "Boosters," Part III., by Mr. H. Broughton; "The Electro-Magnetic Theory," Part VII., by Mr. E. Edser; and "Electricity from Towns' Refuse," concluded, by Mr. W. P. Adams. As part of a serial on "The Elements of Chemical Engineering," Dr. Grossmann contributes an article with the sub-title "The Mortar and its Technical Equivalents." The writer seems to be taking a very broad interpretation of the expression "chemical engineering," for he discusses in the current issue such machines as stone breakers, ore crushers, disintegrators, grinding mills, and mixing machines. Steam boilers, gas and oil engines, cement kilns, and concrete mixers also involve chemical reactions, but it would be very inconvenient to have these and other appliances included in the present series, especially as the writer seems now to have dropped into a style that is purely descriptive, and consequently does not make any demands on the technical knowledge of a chemical expert.

The *World's Work* contains a short account of "The New Transporter Bridge," a type of structure of which several notable examples have been built on the Continent by M. Arnodin. The first bridge of this kind to be erected in Great Britain is one across the Mersey between Runcorn and Widnes, described in our issue of October 31, 1903, the second is being built across the River Usk at Newport, Mon. The article is illustrated by photographic views giving an excellent idea of the ingenious principle adopted in structures of the class described. A first article by Mr. S. G. Hobson on "Machine Tool Progress in Great Britain" deserves reading, if only for the refreshing account it gives of the efforts made during recent years by British tool-makers. During the great engineering strike large quantities of the American and German tools were imported into this country, and the notion became prevalent that we were hopelessly behind the times in the design of machine tools. But, as the writer shows, foreign-made products were tried and found wanting. Then, when the result of the strike was that British engineers were freed in some measure from the restrictions formerly imposed by trade unions, our own makers began to introduce labour-saving tools, embodying the best features of foreign types but avoiding their manifest deficiencies. Another article, entitled "The World's Longest Tunnel," gives an outline account of the methods followed and of the difficulties experienced in boring the Simplon tunnel—a gigantic task now successfully completed. Among several illustrations, two are particularly interesting, the first showing the details of the granite arching for the tunnel, and the second representing the manner in which massive timbers and rolled-steel sections were buckled under pressure of the rock. It is worthy of note that concrete was afterwards used for the reinforcement of the steel members with most successful results.

In the *Century* is an article on "The Châteaux of the Loire," by Mr. Whiteing, the author of "No. 5, John-street" and "The Yellow Van," an odd literary source for an article on old Châteaux; and the article, as might be expected, is literary and historical rather than archæological; the illustrations of Luynes, Chenonceaux, and Chinon, are admirable, but then they are not the author's, but are by MM. Jules Guérin and André Castaigne.

An article in *Macmillan* on "Ruskin at Hawarden," by Mr. W. Sinclair, is amusing from the simplicity with which the writer concludes that all Ruskin's sentimental or sometimes querulous letters to the inhabitants of Hawarden, and his *outré* and absurd opinions on everything, are to be matters of serious interest to the reader; and all this, too, at a time when reasonable people are beginning to find out Ruskin, if indeed some of them have not found him out long ago. Among other things the writer impresses on us how greatly Ruskin was devoted to music, and the beautiful things he said about it. Now it is a fact that Ruskin not only did not know good music from bad, but that on a particular occasion at Sir Charles Hallé's he preferred the bad to the good. All this belief in Ruskin's unerring judgments about Art and Life is mere childish sentimentality.

Harper contains a short article on "What Herculaneum Offers to Archæology," by Dr. Waldstein, who has perhaps the best right of any Englishman to speak on the subject. Dr. Waldstein sums up hopefully as to the prospect of the arrangements for the excavation being soon made, and we hope he has not formed too high expectations of the importance of the work which waits to be revealed there; nor do we think so. At all events, the archæological world ought never to rest till it does know all that can be known. In the same issue is a short scientific account of the N-rays by Professor Duncan, of Washington and Jefferson College.

In *Scribner*, under "The Field of Art," Mr. Russell Sturgis writes also on Herculaneum, with equal enthusiasm but admitting just a hint of possible disappointment. He gives a plan (but without a scale) of the one large villa which has been partially ransacked, and of which the walls and columns have been approximately planned from measurements taken with difficulty in tunnels. If there are many more houses like this, however, great things are to be expected.

The *Revue Générale* contains an article by M. H. Mainde which may interest many English readers; it is entitled "A Travers le Vieil Oxford," and gives a French visitor's impressions of the University buildings of Oxford. The High-street seems to have impressed him as much as it impressed the German art-critic Dr. Waagen, who said that it had not, as a street, its equal in the whole world. M. Mainde says, on describing his first turning into it:—

"A cette vue on éprouve un peu la sensation qui émeut l'âme du touriste, lorsqu'après avoir parcouru une gorge profonde et resserrée, il arrive tout à coup devant un gigantesque panorama de montagnes, aux contours et aux perspectives grandioses!

La *High Street* est la rue la plus majestueusement belle qu'on puisse voir dans le Royaume-Uni. Certain quartier d'Edimbourg étonnera peut-être par la noblesse seigneuriale de ses constructions; Chester avec ses magasins et ses maisons bourgeoises à l'aspect médiéval, présentera des applications plus variées et plus élégantes d'un même type d'architecture, mais nulle part ailleurs, on n'admirera une plus grande abondance de styles, déployée avec autant de luxe et d'aisance."

He spoils the famous Latin motto of the University, "Dominus Illuminatio Mea," by inserting a comma after "Dominus," which is not only unnecessary but somewhat modifies the sense. But the article is written in a picturesque style and with much appreciation of the beauty and interest of Oxford from an architectural point of view. With modern buildings the writer does not deal.

In the *Antiquary* Mr. Larkby concludes his article "Notes on Prehistoric Man in West Kent," with further illustrations of flints which he thinks have been artificially worked, but which (as far as one can judge from drawings) we should think very doubtful, except perhaps Fig. 8. Under the title "Sacred Rites in a Shetland Isle," Miss Jessie Saxby contributes a very interesting article on remains of places of worship in the Island of Unst. The Rev. J. B. McGovern continues his article on "The Round Towers of Ireland," containing a summary of different opinions and arguments in regard to their origin, and urges that "if the adherents to the Christian theory would recognise a *possible* Pagan type, the advocates of this latter would concede the *undoubted* Christian source of several, the ruins of which still stud the uplands and lowlands of Ireland." We confess it appears to us that one must take them all together, as Pagan or Christian; but it is hardly likely that there will ever be any certainty on the subject.

UNSOLVED PROBLEMS IN ELECTRICAL ENGINEERING.

THE "James Forrest" lecture by Colonel Crompton at the Institution of Civil Engineers on Monday night was listened to with the greatest interest by a crowded meeting. Although hardly any of the problems discussed by the lecturer were novel to the electrician, yet the clear *résumé* he made of the partial solutions that have been attained and of the many difficulties that have still to be overcome was very suggestive. He regarded the problems from the point of view of the manufacturer and the engineer rather than from the standpoint of the scientist, and although this possibly makes his lecture less interesting, it makes it more immediately useful. He began by discussing some of the difficulties which have arisen in connexion with the effects produced by lightning discharges in underground electric mains. Some electricians were sceptical about these effects, but he had seen cables which had broken down because they were perforated with minute holes, which were, in his opinion, due to sparks caused by impulsive rushes of electricity, induced in the mains during thunderstorms. Overhead wires can be protected efficiently by modern lightning arresters, but the present methods of protecting underground mains are inadequate, and this problem will have to be solved immediately. In our opinion, however, it presents no particular difficulty to the electrician. Companies transmitting power by high tension mains partly overhead and partly underground are by no means uncommon, and the difficulties arising from impulsive rushes during thunderstorms have been met by spark dischargers, or "coherer" arresters of the Thury type. It would be possible to make any system of underground mains almost absolutely safe from lightning discharges by means of suitably-designed electrical "safety valves." The real problem is to find out the number of "safety valves" to be provided.

In connexion with wireless telegraphy, Colonel Crompton pointed out how enormously the present methods of transmitting signals could be improved if a continuous discharger could be invented. It was found in practical work on board ship that the noise made by the sparks between the terminals of the transmitter was very objectionable. Dr. Fleming had very recently overcome this difficulty by letting the sparks take place in carbonic acid gas under pressure. Tesla's suggestions as to the etheric transmission of power he did not regard as feasible. If they should ever be realised, the conditions of our life would be revolutionised.

The difficulties in obtaining steel castings free from blow-holes and porosity were mentioned. It is found that a slight alloy of silicon makes the metal much more fusible; so that the castings obtained are quite regular. It is also stated that the losses due to hysteresis and eddy currents are diminished. As the methods of testing for hysteresis loss are extremely difficult, and the formulæ for eddy current losses in magnetic metal have not yet been found, we fail to see how manufacturers arrive at this conclusion.

Colonel Crompton stated that the method of winding dynamo coils by wires insulated by means of cotton, silk, or spiral paper strip was gradually being abandoned. The winding of the field coils of dynamos often consisted merely of copper strip wound edgewise and insulated with a suitable fibrous material. He was strongly in favour of using copper strip for winding coils. Considerable economy of space could be attained by this means and the coils could be constructed so that the heat was rapidly radiated away. The experiments carried out for the Standards Committee by the National Physical Laboratory proved that the maximum temperature inside a coil as ordinarily wound was often 40° F. in excess of the mean temperature determined in the ordinary way by measuring the resistance of the coil. It was therefore of importance not only to radiate the heat away rapidly, but also to use insulating materials capable of withstanding very high temperatures. Such materials, he believed, could be found, and he showed a coil the insulation of which had

been subjected to a very high temperature without appreciable deterioration.

We did not quite follow the lecturer's remarks about the advantage of being able to run machines at high temperatures. Are we to understand that an ordinary ten-kilowatt dynamo, for instance, if suitably constructed with heat-resisting insulating material, could be run as a fifteen-kilowatt machine, the gain being a much cheaper machine and the loss a diminished efficiency? Although Colonel Crompton adopts views which are widely prevalent, yet many of the foremost electricians regard this desire on the part of manufacturers to run their machines at temperatures above that of boiling water with considerable misgiving. Our own practical experience of heat "resisting" insulating materials has been disappointing. A stationary apparatus, like a transformer, can often stand overheating for a year or two, but the insulation gets brittle and a slight shock or an attempt to move it leads to disaster.

Colonel Crompton is firmly convinced that electric traction can supersede steam. He thinks, however, that the competition of electrical engineers will spur the engine builders to greater exertions and that steam locomotives capable of hauling a train at one hundred miles an hour will soon be designed. He was struck by the fact that American electricians are of opinion that goods traffic cannot yet be handled economically by electricity.

For part of the time of the lecture the room was illuminated by the Cooper-Hewitt mercury vapour lamp. Although the light produced by this lamp is an ideal light for reading or working by, yet, as it contains no red rays at all, it is very objectionable, as it makes everyone look deadly pale. The room was also illuminated with two "flame" arc lamps giving a light rich in orange rays. This light was very trying to the eye and, as the lecturer stated, it was quite unsuitable for indoor purposes, although most useful for street illumination. Colonel Crompton mentioned with approbation the osmium lamp of Auer von Welsbach and the tantallum lamp, but these lamps are not yet on the market. Nernst lamps of high candle-power were shown. In conclusion, the rapid development of power distribution schemes in this country was welcomed. There would soon be no necessity for workmen to congregate in towns so as to be near the factory. Each would be able to work in his own country cottage, and the improved physical environment would lead to the welfare of the race.

THE ARCHITECTURAL ASSOCIATION.

A SPECIAL general meeting of this Association was held on Friday, last week, at No. 18, Tufton-street, Westminster, Mr. E. Guy Dawber. President, in the chair, when the Committee's proposal to substitute "Council" for "Committee" wherever it occurs in the Constitution or by-laws was agreed to unanimously.

The ordinary general meeting was then held, when Mr. A. H. Rayment, Cricklewood, was elected a member, and Mr. Reginald Blomfield, A.R.A., was elected by acclamation. The President said they would all be glad to welcome Mr. Blomfield among them. Mr. Blomfield was an authority on education, and he (the speaker) was quite sure he would help the Association.

Building Fund.

The President also announced the reinstatement of Messrs. C. B. Bone, F. A. Whitwell, and P. A. Nash. He also announced the following additional donations to the Building Fund :—

	£	s.		£	s.
J. H. Squire (further donation)	5	5	C. Rene Harrison ..	1	1
Hugh Stannus (further donation)	5	5	Leslie T. Moore ..	1	1
Stanley Hamp (further donation)	3	3	Sundry small donations	1	1

The President stated that 3,000*l.* is still required, less 1,000*l.* kindly promised by a generous donor, and he hoped the money would soon be obtained.

Mr. Louis Ambler, Hon. Sec., proposed a vote of thanks to Mr. H. Tanner, jun., for allowing a party of members to visit the Shipping Offices, Cockspur-street, on Saturday, March 25, also to Sir H. Tanner for allowing members to visit the new Government offices, Parliament-street, on the same date. This having been agreed to, he also announced that the annual dinner would be held at the Criterion Restaurant on Thursday, May 18, at 7 for 7.30.

Officers for Next Session.

A vote of thanks having been accorded to Mr. W. D. Caroe for presenting to the Association seventy-three lantern slides,

The President called upon the scrutineers for their report on the election of officers for session 1905-06.

The report having been handed to the President, he announced that 479 voting papers had been received, of which 23 had been rejected as invalid. The result of the voting was as follows :—

President, Mr. E. Guy Dawber. Vice-Presidents, Mr. John Murray, 317 votes, and Mr. Louis Ambler, 303 votes.

Committee: Messrs. R. S. Balfour, 361; E. Needham Wilson, 358; A. Hart, 356; Arnold Mitchell, 311; J. S. Gibson, 296; W. A. Pite, 282; J. McLaren Ross, 277; E. A. Rickards, 266; J. B. Fulton, 264; and Maurice E. Webb, 212.

Hon. Treasurer, Mr. Francis Hooper; Hon. Librarian, Mr. W. A. S. Pettit.

Hon. Secretaries, Messrs. H. Tanner, jun., and A. Maryon Watson.

Hon. Solicitor, Mr. W. H. Jamieson; Hon. Assistant Librarians, Messrs. E. Gunn and C. M. Crickmer.

On the motion of the Chairman, a vote of thanks was accorded to the scrutineers, *i.e.*, Messrs. J. W. Denington, M. S. Hack, W. I. Travers, and T. W. Watkins, for their services in counting the voting-papers, etc.

The Chairman said it was his pleasing but sad duty to propose a hearty vote of thanks to those members of Committee who had not been elected, but who served on the last Committee. He would couple with that the names of Mr. Driver, Secretary, and his staff for their excellent work on behalf of the Association.

Thanks were also accorded to the School of Design Visitors, who had been unremitting in their attention during the session, and to whom the Association owe a deep debt of gratitude for their criticisms and help; and the Press for their reports of the proceedings of the Association.

The Buildings of the World's Fair at St. Louis.

Mr. H. Phillips Fletcher then delivered a lecture, illustrated by a large number of lantern views, on "The Buildings of the World's Fair at St. Louis, 1904." He said :—

MR. PRESIDENT AND GENTLEMEN—

The "World's Fair" held at St. Louis last year commemorated the centenary of the purchase of the Louisiana Territory by the United States Government from France.

This territory contained over 1,000,000 square miles, and forms the central portion of the present United States.

The Mississippi River formed the eastern boundary between the Louisiana Territory and the United States, and was the great highway upon which the extensive lumber trade of the Americans was carried to the port of New Orleans.

In 1800 this port had been secretly retroceded from Spain to France, and two years later, when the fact was announced, great alarm was caused in the States on account of the strained relations with France. Moreover, Spanish officials still lingered at the port, and were a great cause of annoyance to the Americans.

In 1803, Jefferson, the then President of the United States, sent Commissioners to Napoleon the Great to see if terms could be arranged for the purchase of the city and Island of New Orleans. Napoleon, apparently being in great need of money to carry out his expansive ideas in Europe, conceived the idea of bartering the whole of the Louisiana Territory for much-needed gold. The business capabilities of the little Corsican proved quite equal to dealing with the astute Yankee, and, after various negotiations, he succeeded in squeezing fifteen million dollars out of the pockets of the American citizens.

This, the greatest deal in real estate ever negotiated, more than doubled the area of the original States, which, as defined by the Peace Treaty of 1783, contained less than one-third of the present area of this great Republic.

At the time of the purchase there were many who opposed it, but the wisdom of the venture has been more than justified since by reason of its great mineral wealth and agricultural resources.

The Site.

The site chosen for the Exhibition included a considerable portion of what is known as the Forest Park; and some idea of its character can be gleaned from the view on the screen, which represents the same partially cleared in readiness for the preliminary engineering works. After the plans had been considerably advanced it was found that more land was necessary, and the Exhibition authorities obtained a lease of the Washington University (then in course of erection), together with the grounds containing 110 acres belonging thereto.

The General Plan.

A piece of land known as the "Catlin Tract" was added at a later date, for the owners, knowing that it was indispensable, set a stiff price upon its sale, which the Exhibition authorities had to submit to. During the Exhibition this portion was known as the "Pike," and the Amusements concessions were situated thereon.

The total area occupied by the exhibition was over 1,240 acres, being greater than the combined areas of the Chicago, the Buffalo, and the last Paris Exhibition. About one-fifth of the whole area was roofed in.

The main scheme of the plan somewhat resembled an open fan, and was originated by a Committee of some seventeen architects who were partners in nine prominent American firms. The plan proved to be scarcely comprehensive enough, as the Exhibition assumed much greater proportions than were anticipated.

It will be seen that the instructions to the Commission were inadequate. The consequence was that the Exhibition was to some extent marred by the fact that there were really several separate schemes for the buildings. It would perhaps have been better if some scheme had been devised which would have admitted of expansion. This would have prevented some irritation to visitors, as it involved the separation of more or less allied subjects which wasted one's physical energy in searching for.

The central feature of the picture was the Festival Hall, which was situated on the crest of a hill. Restaurant Pavilions on either side were architecturally connected to the Festival Hall by the Colonnade of States. At the foot of the hill was the Grand Basin, into which three series of cascades discharged 90,000 gallons of water per minute.

Three main avenues radiated from the hill and afforded vistas terminating with the highly decorative features of the Festival Hall, the Colonnade of States, and Restaurant Pavilions. These avenues were crossed by a Grand Transverse Avenue, which thus gave the general outline to eight of the main Exhibit Buildings.

This Transverse Avenue was to have had a semicircular sweep, but the extra cost it would have entailed in erecting all the buildings with curved façades was prohibitive. As planned, four of the buildings had a break in one or two of their façades which was cleverly disguised in three of them, viz., in the Education, Manufactures, and the Varied Industries Pavilions.

On either side of the Grand Basin were series of lagoons two miles in length, which surrounded two of the great exhibit buildings and were spanned at intervals by tastefully-designed bridges. Well executed statuary was placed in the main avenues.

The other main exhibit buildings, the Administration Buildings, and the Foreign Concessions, were situated westwards of these, while the States' Buildings occupied the south-eastern corner of the grounds.

An Intramural Electric Railway, 13 miles in length with seventeen stations, skirted the grounds and served a considerable number of the exhibits, though it missed some of the more important buildings.

After the general plan of the "Fair" had been decided upon, the civil engineer commenced his topographical survey of the ground. It was first marked out in 1,000-ft. squares, and was later subdivided into 50-ft. squares, readings being taken at the intersections and at such additional points as governed the contour.

Maps were prepared to a scale of 50 ft. to the inch, and monthly progress maps showed at a glance the advancement made in the erection of the works.

Engineering.

The engineering works and building construction involved by this Exhibition were extensive.

In preparing the site for the buildings some 2,000,000 cubic yds. of earth were moved.

To facilitate the construction and the housing of the exhibits, fifteen miles of temporary track had to be laid through the grounds, in

addition to extensive storage tracks in the south-western part of the grounds.

Burnt ballast, gravel, macadam, asphalte, and brick were the materials used in the road-making. Oak was used in the kerbing throughout, 10 in. by 3 in. in thickness being the scantlings employed.

An adequate water supply was provided from the mains of the city of St. Louis. Quite a network of pipes, varying from 2 in. to 12 in. in diameter, and 21 miles in length, was laid down over the entire grounds and inside of the buildings.

In addition to this there were about 36 miles of pipes installed for high-pressure fire protection, and each State, foreign, and concession building, had to connect its own system of pipe to the Exposition mains.

There were 530 high-pressure hydrants and 31 deck turrets for the protection of the main Exhibit Buildings. There were also five fully equipped fire-engine stations, and a double company of Hale's Fire Fighters from Kansas City.

The pipes for the high-pressure system for roofs and the inside and outside of buildings were of wrought iron, tested to withstand a pressure of 750 lb. per sq. in., and a pressure of 150 lb. was maintained by means of fourteen 1,000-gallon fire-pumps.

Other means of fire protection were provided in sprinkler systems and numerous chemical fire extinguishers placed at convenient points in each building.

The River "Des Peres" pursued a somewhat tortuous course through that part of the grounds upon which the main exhibit buildings were to be erected, and it therefore had to be diverted and the old river bed filled in. A timber flume, 45 ft. wide by 15 ft. deep, was constructed for this purpose.

For the drainage of the grounds, in addition to the waterway of the harnessed "Des Peres," 25 miles of storm water drains were constructed and ample provision was made for the reception of the water outside the grounds, so as to prevent damage from the overflow.

For the main sewerage scheme the Exhibition authorities laid down 12 miles of 8-in. vitrified pipe sewers and about 1¼ miles of brick sewers.

These discharged by gravity into two wells near the Mines Building, from which the sewage was pumped into the sewer mains of the city by four electrically-driven centrifugal pumps.

In addition to this main sewerage scheme there was the system installed for the Washington University Buildings in the north-western corner of the grounds, a few stray sewers laid by speculative builders of real estate plots, and the pipes laid by the various States and the Foreign Governments and concessions.

The bridges were constructed on a standard plan. This consisted of a simple arch system of 3-in. by 14-in. timbers for the top and bottom chords, and a solid web of two courses of 2-in. by 12-in. planking. At the centre, where the head room for passing boats, etc., did not allow of the use of this truss, 3-in. by 16-in. joists were substituted, and were skilfully connected to the main trusses.

The boiler-house was of fireproof construction, and was situated close to the Machinery Building. The steam mains from the boilers were conveyed through a tunnel to the Machinery Building.

A garbage crematory was erected in the western portion of the grounds.

Construction of Restaurant Pavilion.

The Division of Works had entire control over the construction of the main exhibit buildings. A new departure was made in constructing these of timber in lieu of steel, by reason of which a great saving in cost was effected.

Ample opportunities were afforded to the architect of studying this the greatest example of the art of carpentry ever executed, since most of the construction was visible internally, owing to lack of funds to complete the plastering.

The Director of Works stated that only forty draughtsmen were employed to prepare the drawings for the Exhibition Buildings. The designing and erection of the same occupied only some two and a half years.

The foundations of these buildings varied according to the nature of the ground, spread footings, timber cribbing, or piles being used. Some idea of the timber framing, such as was employed in one of these huge structures, is shown in the view now on the screen, which is the skeleton of one of the restaurant pavilions.

Long leaf yellow pine was used for all posts, roof trusses, and framing. The safe tensile strain was taken at 1,800 lb. per sq. in., the safe compression perpendicular to the grain 800 lb. per sq. in., and the safe shearing stress parallel to the grain 150 lb. per sq. in. In the white oak keys the safe stress parallel to the grain was taken at 400 lb. per sq. in.

The walls of the main exhibit buildings, which were 2 ft. in thickness, consisted of timber framing. The timber columns were so constructed as to approximate conveniently to the finished design. Steel and wood lathing were used to carry the "staff."

The "staff" was generally composed of 2 parts of plaster of Paris and 1 of Portland cement, to which Manilla or jute fibre was added, and these were mixed together with water till in a plastic state.

This composition was then either applied direct to the laths or expanded steel sheets, or was cast into moulds, and, when thoroughly dry, nailed to the framed walls. When cast it could be sawn or planed in the same way as wood. It is alleged to withstand the weather if painted.

The white oak keys of circular cross-section were used throughout the construction in the following cases:

(1) To make the shear connexions between the individual posts of built-up columns (which were subject to direct compression and bending strain).
(2) To make all tension splices of jointed timbers break joint wherever they occurred.
(3) To make all attachments to posts and trusses where a force parallel to these members had to be transmitted to them.

These keys, which were 2 in. in diameter, were driven into holes bored after the individual timbers had been bolted together. When the keys were all in position the bolts were tightened up. The advantage of circular keys is evident from the great saving of expense by their adoption, as but little labour is necessary; they are also speedily fixed in position, and the certainty of uniformity in their fit was certain since the holes were bored with augers operated by compressed air. The disadvantage in practice was found to be that when the timbers shrunk these keys could not be tightened up, and in some cases they fell out and did some damage to exhibits beneath. Life and limb being held so cheaply in the States one must not stop to enumerate the accidents that occurred to the mere public therefrom.

Square keys used as folding wedges are undoubtedly superior, since they can be tightened up; and moreover, the pressure of the shearing strain does not develop a component laterally, as with the round keys. Doubtless, therefore, the former would have been adopted if the buildings had been required for any considerable length of time.

Roof Truss (Transportation Building).

The roof trusses employed were mostly of the familiar Howe type, the span of these varying with the requirements of the different buildings. The main columns measured 14 in. by 3 ft. 8 in. on plan, and were composed of two posts 10 in. by 14 in., and one post 8 in. by 14 in., with two sets of packing pieces, 8 in. by 14 in., between. The columns supporting some of the smaller roof trusses were composed of two posts, 12 in. by 14 in., with one set of packing pieces of similar scantling between them. Numerous oak keys, as already described, were employed in transmitting the stresses which these columns were subject to from post to post.

In an exhibition, if skilfully contrived, columns internally should not interfere with the exhibit spaces.

The roofs were mostly flat, except where architectural effect necessitated them being otherwise, and composition roofing was the chief covering used.

The buildings were intended to be finished internally in plaster, but lack of funds prohibited this being fully carried out, which was fortunate from the point of view of an architect desirous of studying the construction. The main exhibit buildings were chiefly lighted by means of sky-lights, clerestories, and lanterns, or "monitors," as the latter are called in the States.

The Commission of Architects fixed a uniform cornice level of 60 ft. above the adopted ground level for the Main Buildings. This cornice level was, therefore, about equal to the height of the two orders to the Banqueting House, Whitehall, and may give some idea of the scale employed.

The earlier plans suggested galleries, but the authorities in charge of the exhibits department deemed them undesirable, since very few would be likely to visit anything above the ground floor level of such stupendous buildings.

Festival Hall, etc.

Having thus dealt with the general structural features of the main buildings, we will rapidly consider a few of the principal buildings.

The Festival Hall was designed by Mr. Cass Gilbert, of New York, in front of his permanent Art Building, the latter being completely screened off by the Festival Hall and Colonnade of States.

It was a large circular building, 195 ft. in diameter, with a rectangular annex containing the stage, organ, accessory dressing-rooms, and offices. The auditorium was covered by a dome, the internal diameter of which was 90 ft.

A gallery was provided, and there were promenades on both this and the ground floor.

Seating accommodation was provided for 3,500, tip-up seats being generally employed in the auditorium and the first four rows of the gallery, while in the remaining rows ordinary chairs were used.

This building was highly decorative externally. Engaged Ionic columns were employed in the circular colonnade, which stood upon a lofty podium. The great entrance, with its curved pediment and crowning sculptured groups, was at once very ornate and imposing. Unfortunately, the great statue of Liberty, raising the veil of Ignorance and protecting Truth and Justice, which was placed above the central cascade, completely obliterated it from view when standing on the Plaza of St. Louis.

The crowning feature of the building was the dome, which rested on a lofty drum of considerably less diameter than the circular colonnade. Bull's-eye openings were introduced at the junction of the dome with its drum.

Originally it was intended to place a seated figure upon the dome, but in execution this was varied to a figure of Victory.

The cost of this building was about 53,000*l.*

Colonnade of States and Restaurant Pavilions.

The Colonnade of States, designed by Mr. E. L. Masqueray, was an ornamental screen, 52 ft. in height and 1,500 ft. in length. It was formed of a succession of fourteen hemicycles, in which were placed statues symbolical of the States and Territories included in the Louisiana purchase. Ionic columns were used in pairs, and swags were suspended between the capitals. These had a somewhat detached appearance as seen against the sky.

The Restaurant Pavilions, which were placed at each extremity of the Colonnade of States, were extremely festive in design. Mr. Masqueray was responsible for these also.

From most parts of the grounds these pavilions and the Colonnade appeared to be somewhat too disconnected.

Cascades and Gardens.

The borders of flowers were tastefully arranged, and changed with the seasons. These cascade gardens, perhaps, attracted more attention than any other decorative feature of the Exhibition. At night the cascades were illumined by means of three sets of incandescent lamps, which changed ever and anon from white to red and green.

Art Buildings.

The Art Buildings made a majestic architectural group on the hill behind the Festival Hall and Colonnade of States, and consisted of four distinct buildings, three of which presented a total northern frontage of 830 ft. The central building is of fireproof construction, and remains as a permanent public picture gallery, being a lasting monument of this vast Exhibition. It is 340 ft. long and 160 ft. wide, and contains a large central hall for sculpture, with galleries on either side for pictures and other works of art. During the Exhibition period the Main Building was occupied entirely by exhibits from the United States.

As already mentioned, it did not form a part of the main picture of the Exhibition. The reason given was that this building is of buff-

brick, which did not harmonise well with the ivory white staff of the Exposition buildings.

The temporary structures, each measuring 422 ft. by 200 ft., on either side of the permanent building were to some extent fire-resisting.

The Ionic order was employed in these buildings, and the portico of lofty Corinthian columns to the central building accentuated the main entrance.

The fourth building was a pavilion, 200 ft. by 100 ft. on plan, for sculpture by masters of international reputation, and was situated on the fourth side of a court formed by the three art buildings already mentioned.

The cost of the entire group was over 210,000*l.*

U.S. Government Building.

The building erected to house the United States Government exhibits stood on high ground at the eastern end of the Grand Transverse Avenue. It was approached by three great flights of steps, in addition to which gentle inclines led to the terrace level. The main façade was some 750 ft. in length, and the central entrance portico, with its coupled Ionic columns, was connected to end pavilions by a colonnade of Ionic columns 45 ft. high and 5 ft. in diameter. Above the main cornice level an attic 15 ft. in height was introduced, and it will be noticed that, in the case of the central portico, the pediment was placed above this attic, thus giving importance to the main entrance. A low dome, 93 ft. in diameter, was a prominent feature of the roof, and in general character it suggested that of the Pantheon, Rome, as the *motif*.

The general design of the building had a breadth of treatment and purity of detail in keeping with its purpose, and excellent opportunities were afforded for sculptured ornament.

This building was the only instance in which the roof was carried by steel trusses, 175 ft. in span, at intervals of 35 ft.

The architect was Mr. James Knox Taylor, supervising architect of the Treasury Department, and the cost was some 73,000*l.*

Main Exhibit Buildings.

We now come to the main exhibit buildings. I have already mentioned that the general scheme was decided upon by a Commission of Architects representing nine firms, and each of these firms was entrusted with the design of one of these vast palaces. We have also noted that the Division of Works designed the construction and controlled the erection of the same buildings. Thus the architects were responsible only for the elevations, an altogether unsatisfactory state of affairs, which can only lead to the alienation of the two factors of our accepted definition of architecture: "Design in Beauty and Build in Truth."

Mines Building.

Commencing at the eastern end of the Grand Transverse Avenue and proceeding westwards, we first notice the Mines and Metallurgical Building on our left and the Liberal Arts Building on our right. The Mines and Metallurgical Building, measuring 525 ft. by 750 ft., was designed by Mr. Theodore C. Link, of St. Louis.

The great overhanging roof was a distinguishing feature, the eaves projecting rather more than 18 ft. beyond the face of the loggia. The piers in the loggia had capitals of an Ionic type, while the columns upon the screen walls were of a Byzantine origin. The screen walls were filled with sculptured panels representing various branches of mining and metallurgy.

Two of the central entrances—those on the north and west sides—were surmounted by a globe 30 ft. in height, which was supported by colossal figures, 28 ft. high, and surrounded by other finely modelled groups of even larger size. Great obelisks, 140 ft. in height, flanked these entrances, but unfortunately were placed too close to the building, having the appearance of being jammed up against it. Moreover, they hid the sculptured groups and globes from most points of view.

These obelisks were intended to symbolise the greatest mining (quarrying) feat of antiquity performed by the Egyptians thousands of years before the Christian era. The cost of this structure was about 110,000*l.*

Liberal Arts Building.

The Liberal Arts Building was entrusted to Messrs. Barnett, Haynes & Barnett, of St. Louis, and was of the same dimensions as the Mines Building just described. It was alleged to be designed in the French Renaissance style, and the treatment was described as being somewhat severe.

The main façade to the Grand Transverse Avenue had a colonnade of coupled columns of the Roman Doric order. The principal entrance, in which the Corinthian order was employed, was in the centre of this façade, and was taken considerably above the main roof in rather an abrupt manner. Similar entrances occurred towards the extremities of this front, and semi-circular pavilions, crowned with domes, were introduced at the corners of the building.

Education Building.

The Education Building, designed by Messrs. Eames & Young, of St. Louis, was situated next to the Mines Building, and was entirely surrounded by lagoons, which contributed largely to its effect. Its position rendered it one of the most conspicuous buildings in the main picture. On plan it was the shape of a key-stone to an arch, and covered an area of about 9 acres. The Corinthian order was employed in the colonnades, the giant columns being 50 ft. in height.

The main entrances, which were placed in the centre of each façade, resembled somewhat the well-known form of the triumphal arch, and were surmounted with finely modelled quadrigas.

The break in the façade to the Grand Transverse Avenue was very successfully treated in a simple manner by slightly projecting the main entrance. The cost was about 75,000*l.*

Manufactures Building.

The Manufactures Building, by Messrs. Carrère & Hastings, of New York, faced the Education Building on the opposite side of the Grand Transverse Avenue. It covered an area of about 14 acres. The northern and southern façades had breaks in them, the former having an entrance resembling a great triumphal arch, and the latter a deeply recessed arched opening which interrupted the lines on either side of the break. The corner entrances were skilfully contrived, and were surmounted with flat Roman cupolas. This building was raised on a stylobate of steps, and the Corinthian order was employed in the façades. The northern and southern fronts had arcades, the columns being placed in pairs to the piers between the arches. The crown of the latter was close to the cornice, which ran continuously round the building. This structure cost about 144,000*l.*, being a greater sum than was spent upon any other main exhibit building.

Electricity Building.

The Electricity Building was similar on plan to the Education Building, and also occupied about 9 acres. It was designed by Messrs. Walker & Kimball, of Boston and Omaha. It was situated on the other side of the Grand Basin from the Education Building, and, like the latter, was surrounded by lagoons. The Corinthian order was employed externally in all the façades, the columns resting directly on the ground. Had these been raised upon a stylobate of steps there would have been a gain in dignity to the building. The raised pediments over the central entrances and the low towers at the angles of the structure accentuated the façades. The treatment of the break in the northern façade was not a happy one, since, the entrance being recessed, the awkwardness of this undesirable feature was emphasised. The cost of this building was some 85,000*l.*

Varied Industries Building.

The Varied Industries Building was designed by Messrs. Van Brunt & Howe, of Kansas City. It was situated on the opposite side of the Grand Transverse Avenue to the Electricity Building, and covered an area of similar shape and size (14 acres) to the Manufactures Building. The Ionic order, standing on a lofty rusticated base pierced by arched openings, was employed throughout in the façades. This building had breaks in its northern and southern fronts, each of which were successfully treated. That to the north front was disguised by a circular colonnade, while that to the south front had a free-standing colonnade which curved outwards in front of it.

Domes were placed over the central entrances to the north and south fronts; while the central entrance to the eastern front was elaborated, having large coupled Ionic columns surmounted by a triangular pediment. Twin belvedere turrets, with conical roofs, flanked this entrance.

The cost of the structure was about 142,000*l.*, the second most costly building erected by the Division of Works.

I might mention here that the four buildings last described, namely, the Educational, Liberal Arts, Electricity, and Varied Industries Buildings, were provided with internal courts, but owing to the demand for more exhibit space these were roofed over to a great extent, the Electricity Building suffering least in this respect.

Machinery Building.

The Machinery Building was designed by Messrs. Widmann, Walsh, & Boisselier. It was situated to the west of the Electricity Building in a position corresponding to the Mines Building, and its main dimensions were 1,000 ft. by 525 ft. The northern façade had an arcade of seven arches as the central feature, above each extremity of which rose lofty towers in three stages. The remainder of the façade had an arcaded treatment, the Corinthian order being used, and the corner pavilions were accentuated by towers of similar design to those at the main entrance, but without the middle stage. These towers, while well proportioned in themselves, appeared out of scale with the design. The cost of the structure without the sculpture was some 110,000*l.*

Transportation Building.

The Transportation Building was designed by Mr. E. L. Masqueray. It was situated opposite the Machinery Building in the Grand Transverse Avenue, and occupied an area of over 15 acres. The eastern and western façades had an arcade of three great arches, which formed a distinguishing feature. These arches were to have been repeated in the centre of the long façades, but were omitted in execution. Simple but well-proportioned three-light windows were ranged along the northern and southern façades, at the extremities of which appeared a single arch of similar design to those in the eastern and western façades.

Sculpture was sparingly used, the architect depending more upon proportion and mass effects for the success of the design. The cost of the structure was close upon 138,000*l.*

Agriculture Building.

The Agriculture Building was allotted to Mr. Isaac S. Taylor, the Director of Works, to design. It was 1,600 ft. long and 500 ft. wide, and was situated quite apart from the main scheme and westwards of it. It was divided into nine aisles, with eight rows of columns, which supported the roof trusses. The centre span was 105 ft., and it would have been better if the remainder of the width of the building had been roofed in four spans instead of eight.

As it was, when viewed from the side there appeared quite a forest of timber columns, which were somewhat confusing. However, the plan was simple, and could be readily divided into exhibit spaces, while the lighting was irreproachable.

There were five main entrances to this building, one in each of the northern, eastern, and southern façades, and two in the western façade. These were each 52 ft. wide and 74 ft. high, and consisted of a great arched opening, the upper part of which was glazed. Around these openings was concentrated the ornament, and each was flanked by square piers, surmounted with decorative flagstaffs. Along the eastern and western façades were ranged piers at intervals of 100 ft., and practically the whole of the wall space between these was occupied by windows. This building was the largest in the grounds, yet its cost was only 110,000*l.*

Interior of Horticulture Building.

The Horticulture Building, which was located south of the Agriculture Building, was still another by Mr. E. L. Masqueray, and the design was very simple. The main entrance projected boldly, and the doorway was a large square-headed opening. It consisted of central portion, 380 ft. square, and eastern and western wings, each 205 ft. by 235 ft. These wings were divided off from the central block by glazed partitions, the eastern one being used as a conservatory.

The view on the screen shows the interior of the central block. The framing and roof trusses, which are visible, are typical of most of the main Exhibit Buildings. The cost of this building was rather more than 51,000*l.*

Forestry, Fish, and Game Building.

The Forestry, Fish, and Game Building

was yet another which was designed by Mr. Masqueray. It was situated to the north of the Agricultural Building, and was the smallest of the main exhibit buildings, being only 600 ft. long by 300 ft. wide. The exterior was simple and unpretentious, yet designed in good taste, and the general effect was pleasing.

The long façades were terminated by simple gables, and "pent" roofs were supported on brackets above the windows to these fronts. The eastern and western fronts had central gables with triangular-headed groups of windows, which latter feature occurred in the gables to the northern and southern fronts.

Administration Building: University Hall.

The Washington University Buildings, with the grounds as already mentioned, were leased to the Exhibition authorities for the period of the "Fair." There are eleven buildings altogether, which are built in what we are told is the Tudor Gothic style, and four of the buildings are arranged round a quadrangle. The materials employed are red Missouri granite and cut stone dressings. The principal building is the University Hall, which was utilised for administrative purposes. The central entrance is under a massive square tower, with octagonal towers at each of its angles, which are continued above the battlemented parapet as turrets. The entrance is roofed with a large groined vault in stone. The entire building is of fireproof construction, and cost about 52,000*l*. The other buildings of the University were utilised for various purposes, the Division of Works being accommodated in one, while another was used for the Antropological exhibit.

Washington State Building.

The Washington State Building was a unique structure, specially designed to demonstrate in its construction the vast lumber resources of the State. The great timbers, which have the appearance of raking shores, were over 90 ft. in length, with a scantling of 24 in. by 28 in. These supported all the floors of this five-story building. The interior was finished in the finer grained woods produced by the State.

Foreign Buildings: Japanese Pavilion.

As might be expected, Japan fully established her claim to be recognised as a competitor to European nations, and secured some of the best sites on the grounds. The Japanese exhibits were both varied and extensive, and went a long way to show the resourcefulness of the land of the chrysanthemum. The Mikado's Pavilion will at once be recognised as a typical Japanese structure.

French Pavilion.

The Grand Trianon at Versailles, which was designed by Mansard, was reproduced at the Exhibition for the French Government Building. Unfortunately, the columns, which were intended to represent the marble of the original, were badly painted, and entirely spoilt the effect.

German Pavilion.

The Castle at Charlottenburg was taken as the *motif* for the German Pavilion, but the most that can be said about the latter is that it was given an appearance of age by toning the "staff."

British Pavilion.

The Royal British Pavilion, like the French and German Pavilions, was designed after a typical English building. The Orangery of the Palace at Kensington was adopted as the *motif*, and the architects, Messrs. Ernest George & Yeates, are to be congratulated on their work. The building was erected by Messrs. Trollope, and was constructed of Portland cement on metal lathing. It was undoubtedly the best built pavilion on the grounds, and was purchased by the authorities of Washington University as a students' club-house.

The British Commissioner, Col. Watson, R.E., C.B., C.M.G., was quartered here, and it was due to his energy and enterprise that the British section was the only one in complete readiness on the opening day.

An old English formal garden was laid out near the British pavilion. This was a marked success, and created a great deal of interest and admiration. The portion in the art buildings occupied by the British Section approached the ideal of what an art exhibition should be. All the pictures were clearly labelled with the subject and name of the artist, which thus rendered a continual and worrying reference to the catalogue unnecessary.

The Hon. Secretary of the Art Committee, Mr. J. Spielmann, worked unceasingly for the success of the British Section, and it was largely due to his instrumentality that Great Britain took the foremost place in the fine and applied arts sections. The British Commission was fortunate in securing the assistance of Mr. R. Hunt and Mr. A. A. Longden in these sections, and the admirable way in which they conducted their departments at the Exhibition was an object lesson to the foreign countries in the Fine and Applied Arts Building.

We have reason to feel proud of the Motherland, for the British exhibits were well to the fore in most of the sections. British firms were awarded the following by the juries: 121 grands prix, 238 gold medals, 162 silver medals, 132 bronze medals, making a total of 653 medals in all. This is somewhat encouraging, and speaks more eloquently than words as to the vitality of British craftsmanship.

"The Pike."

Before concluding, a few words might be said about the Amusements Concession. This was known as "The Pike," and was a street about a mile long. Here many interesting side-shows were located, as well as exhibits of practical value, among which might be mentioned the Fire Fighters referred to in the early part of this lecture.

Among other buildings there was a reproduction of Battle Abbey, while the Irish Village, the Tyrolean Alps, the Hagenbeck's Zoo, Creation and a host of other shows crowded this well patronised section of the Exhibition.

Conclusion.

The record which the Great Exhibition holds of being the largest in the world's history is likely to remain unchallenged. Financially it was a failure, and it is most improbable that any community will invest money in such an undertaking in the future.

Few who visited the Exhibition had anything like sufficient time at their disposal to see it entirely. Great bodily strength and endurance were essential to those who hoped to visit all the buildings, of which there were over five hundred on the grounds. Many of these were exhibitions in themselves. Anyone who wished to see all the exhibits in the Agricultural Building was in for a walk of over ten miles!

Evidences of fatigue were frequent, the ambulance being kept busily employed. The glare of the ivory white of the great buildings was most trying to the eyes, and boys did a busy trade selling smoked glasses.

The Exhibition in itself was typical of the American nation; everything savoured of their desire to create something that was the "largest on earth." And this all-absorbing striving after magnitude resulted in the neglect of many details and in the general want of harmony that prevailed, and it would appear that the principles of Tammany Hall were not always confined to the great city of New York.

Nevertheless, one is bound to admit that from an educational point of view the Exhibition was a great success. It must be remembered that it was situated in the centre of a vast country devoted to Agriculture and the extraction of mineral wealth, and that the principal people who passed through the gates were mechanics and farmers. The Exhibition was of such a character as to bring home to these classes not only the latest inventions in machinery and electricity which they would otherwise have been unable to observe, but the ideas and products of each nation could be studied side by side. And as one saw the intelligent farmers and their families day after day coming in trainloads to see this "World's Fair," and as one watched them thronging the huge Agricultural Building, one could not but feel that at least this Exhibition was educating just those to whom it would be of the most practical value.

It occurs to one that the sturdy men of the Western States will form the backbone and steadying influence of the American nation in the future. They are the true yeoman of the Republic, and each tills his own land for his own uses, and sells the surplus, which is the ideal method of agriculture.

One is apt to look upon Americans generally as being of a nervous, excitable temperament, and this to some extent holds true with regard to the true Yankee of the New England States; but the inhabitants of the West have that solidarity of character that will help in the future to weld together the extremely diversified attributes of this cosmopolitan race, and will, we hope, do something to divert that which seems to be the pending catastrophe, viz., civil war between capital and labour, engendered by the formation of the enormous and apparently unscrupulous Trusts.

In the discussion which followed, Colonel C. M. Watson, R.E., C.B., C.M.G., Commissioner-General for Great Britain, who was called upon by the Chairman, said he had great pleasure in proposing a very hearty vote of thanks to Mr. Fletcher for his admirable lecture. Mr. Fletcher's slides and descriptions brought back to him many happy days which he passed in the Exhibition, and of days which were given up to work, for organising an exhibition and looking after it meant work—more perhaps, than many people could understand. On the present occasion they were considering the architectural side of the Exhibition, and he agreed very thoroughly with Mr. Fletcher's remarks on the various buildings; but Mr. Fletcher had not alluded to one of the effects of the Exhibition—one of the best effects—*i.e.*, when the shades of night fell upon the Exhibition, and the buildings were lit up most beautifully with the electric light. It was quite a fairy scene, especially the cascades and the Colonnade of States and the Festival Hall and the Education and Electricity Buildings. It was one of the features of the Exhibition which one could never forget, and in some respects the night view was more satisfactory than the day view, because with many of the buildings one felt that the exterior had been designed by one person and the interior by another; and in architectural work, in order to gain a really good result, the interior should be designed first. The result was that many of the buildings, however beautiful the exterior, were not altogether satisfactory from an exhibition point of view. The lighting left much to be desired—in some places it was not enough and in others it was a great deal too much. Of course, in a town like St. Louis, situated where the sun was very hot in summer, the question of lighting had to be specially considered, and the lighting of some of the Exhibition buildings was excessive—in fact, many of the exhibitors put awnings over the exhibits to prevent them being damaged by the sun. But there was one building, designed by Mr. Masqueray (of whom he was glad to hear Mr. Fletcher speak so well, for he was one of the best of the Exhibition architects)—the Agriculture Building, which was not so remarkable outside, perhaps, but which inside certainly was excellent from an exhibition point of view. The interior view from the northern entrance was magnificent, and, though one of the largest of the buildings (it was 1,700 ft. in length), it was, from an exhibition point of view, one of the best; the light was good throughout, and it was less obstructed by wooden columns and girders than the other buildings. The view across it was not so effective, and he thought it might have been improved had there been fewer wooden columns and had the girders been longer, but, generally speaking, the building was an admirable one. In that building, for some reason or other, people did not suffer as they did in other buildings from the oak dowels falling out. Certainly it would have been better had some other mode been adopted of fastening the timber, for the result of the method employed was a danger, and some of the exhibits were seriously damaged by the heavy oak pegs falling out. It would have been better had screw bolts been used, or some other means found of fastening the timber than these wooden pegs, which were dangerous to the exhibits and the passers-by; an oak peg weighing some pounds could not be anything else when falling some 60 ft. Mr. Fletcher had made some kind remarks about the British Royal Pavilion and its garden. That garden was one of the most peaceful spots in the whole Exhibition, and it was very pleasing to see women and others who had become tired by wandering about over the great distances they had heard about coming into the British garden to rest upon the seats—many of them Englishwomen who were glad to see again the English flowers growing in the English way. Many people brought their lunches, and at first it was decided to prohibit lunching in the British garden, but they could not do it when they found how much the people enjoyed the quiet of the place. The exhibition of Queen Victoria's Jubilee presents was certainly one of the most successful exhibits of the whole show; more than a million people came to see them, of whom the vast majority knew very little about England before they saw those presents; but afterwards they knew a great deal about England. Another

feature of the British Section which gave great interest was the little group of constables from Scotland Yard, whose civility surprised the people.

Mr. A. A. Longden, of the British Commission, who seconded the vote of thanks, referred to the skilful way in which the garden architects had tackled the enormous banks of mud which faced one everywhere at the beginning of the exhibition, and into which one continually sank to one's knees. In two months it was transformed into quite tolerable landscape by putting in small trees and shrubs by the thousand, planting Indian corn and numerous other quick-growing specimens. The Exhibition did an enormous amount of good to the people out west, and from an artistic point of view it was also highly appreciated. A picture dealer in St. Louis told him that he had sold more works from the end of the Exhibition to the beginning of January than he had in any three months previously, thus showing that the American people are willing and able to appreciate things artistic if only they are enabled to see them thoroughly.

Mr. A. O. Collard, who supported the vote of thanks, said that one reason why the St. Louis Exhibition scheme was rather scattered was that inadequate instructions were given by those who spent the money. They thought they would rather start with a comparatively small scheme than launch out on a larger one and be unable to fill the buildings, and that, no doubt, was why the scheme was developed in the way they saw. Mr. Fletcher used the word "fireproof" in his paper, though he had not actually spoken it that evening, and in his address he spoke of "fire-resisting" materials. The word fireproof was not used now in connexion with buildings. Even in the Building Act the phrase "fire-resisting" was used instead. Mr. Fletcher also spoke of "lumber," which was a cumbersome word, instead of timber, and it seemed to be a fact that Englishmen who went to America brought back American words, which, however, wore off in time. As to the interior of the buildings of the Exhibition being left unfinished owing to lack of funds, he thought it was a good thing that it was so from the architect's point of view, for it was better to show the construction of such temporary buildings. It must have been a fine sight to have been at the Exhibition and seen the whole of this construction, and it was pleasing to see the timber construction from the slides; and the sense of space which was felt would have been lost had the buildings been lined inside with plaster, as was proposed. It had occurred to some architects whether they were going in the right direction in covering the wood and steel construction of exhibition buildings in plaster. Some of them thought that the Exhibition of 1851, when Paxton's idea of a noble exhibitory building was put into execution, had started on the right lines, and that since then we had been getting farther and farther away from the right kind of building for public exhibitions. As to "staff," which was what we knew as fibrous plaster, Mr. Fletcher had not, apparently, a good opinion of it. He (the speaker) had used the material a great deal, and in his opinion it was the best substance for enclosing a temporary building, provided it was beyond the reach of human beings who might kick it or put sticks or umbrellas through it. He had used fibrous plaster at Earl's Court, and some they had used in 1895 was as good now as when it was first put up. The material, however, where the weather gets at it, needs to be painted every year, and if that were done there was no reason why it should not last as long as any ordinary building material. One wondered, however, what was the "fibre" used in the composition of the material at St. Louis. A Belgium firm he had employed used chopped up hay, about a foot in length, and the plaster was as good to-day as when first put up. As to plasterers, the English plasterer used to give a lot of trouble, and whether that was the case in America or not Mr. Fletcher did not say. At Earl's Court it had been possible to get the plaster work finished only by employing foreign as well as English plasterers, and at one time they had nearly 1,000 plasterers at work there in 1895, or the work could never have been finished for the opening. He was sorry to say it, but in his experience the Belgium plasterers were the quickest to grasp ideas, the quickest at their work, and the cheapest to employ at that time, though matters have improved since in the English trade. Mr. Fletcher did not say if the plaster at the St. Louis Exhibition was painted, but he supposed it was, unless it was distempered. At Earl's Court the plaster was painted. Where money was an object, painted canvas could be used for these temporary buildings, and he was rather surprised that the Americans had not tried this. The scenic artist was so clever nowadays, and as plaster was a sham, why not, in the interests of economy, have a little more sham and use canvas instead of plaster, and paint it? The delightful practice of using wood was not permitted in England in these buildings on account of the supposed risk of an outbreak of fire; in America, every possible means was provided of putting out a fire if one occurred. Mr. Fletcher had mentioned the total cost of the various Exhibition buildings, and most Englishmen would think that cost very great, but he would be interested to know how much per foot cube they cost. In that connexion, he might mention the foot cube cost of the Empress Theatre at Earl's Court. He had asked people what they thought the cost per foot cube of that building was, and they had replied from 4d. to 6d. Including all the seating for from seven to 10,000 people, all the machinery, two blocks of dressing rooms for 1,000 performers, etc., the cost worked out at 2d. per foot cube. The cost of most ordinary exhibition buildings varied from ¾d. up to about 3d. per foot cube. The question of medals had been mentioned, and he was wondering whether the St. Louis Exhibition people sinned against the public as did most exhibition authorities. They usually grant an enormous number of medals, but the unfortunate exhibitor could not have them unless he paid for them.

Colonel Watson: It was laid down in the regulations that no medals would be issued except bronze medals, and that issue was free; the grant of a diploma carried with it a free bronze medal. If an exhibitor had a gold medal he had it at his own expense. Medals of different character for each class of award were to be issued, so as to insure that a bronze medal should not be gilded over to look like the gold medal.

Mr. Collard: St. Louis Exhibition was not different, then, in that respect from other exhibitions. When a gold medal was awarded it ought to be given. But in this case it was a question of expense; the Exhibition did not pay, and that was a great pity. The cost of administration must have been enormous, and crippled the Exhibition financially.

Mr. Banister F. Fletcher said the point that would occur to most of them was the place the Exhibition took in comparison with other and past exhibitions. The Paris Exhibition, fifteen years ago, was a very different one from the St. Louis Exhibition, and especially in the matter of architectural design. The Parisians, for the first time—if one omitted Paxton's great building—seemed to regard their exhibition of 1890 as an opportunity for doing some really quite novel things in design, and at a great deal of expense and loss they produced quite a novel type of architecture. They took iron and terra-cotta, and most of the big buildings at the Exhibition—the Fine Arts Palace and the Liberal Arts Palace—were formed entirely of steel or iron framing riveted together with interstices of buff terra-cotta. That was in Paris—the home, as might be said, of Roman art in its modern form, and there they found this great attempt at something novel. That was a great thing to do, but it seemed to have died a natural death, and neither at Chicago or at St. Louis was anything novel in the way of architectural design attempted. That was a great pity, seeing that these buildings were temporary. They were designed to serve a temporary purpose, and yet the main idea of the American architects seemed to have been to make these temporary buildings look as permanent as possible. The orders of architecture had been introduced on an enormous scale, and the buildings to all intents looked like great marble palaces. It was a question whether it was an advisable form of design to adopt, or whether it would not have been more in keeping with exhibition design if something temporary in appearance had been done. The steel method of building adopted in Paris was much more expensive, but still it seemed that something might have been done in the way of evolving a timber architecture. The bones of the St. Louis Exhibition buildings were of timber, and if some ingenuity had been shown in evolving a timber type of architecture—showing what the buildings were really made of—it would have been more interesting to architects, at all events. The use of "staff" was an easy way of making a permanent-looking building. While at the Paris Exhibition of 1889 he went into the question of the composition of "staff," and his report was in the Institute Library. Of the ability and the success of the architects of the United States in the buildings they had erected for the Exhibition there could be no doubt, and he did not suppose that in any other city of the world would one see such a great architectural effort on such a magnificent scale. The Chicago Exhibition, where he spent six weeks, must have been quite an insignificant affair in comparison with the St. Louis Exhibition, and yet the Chicago Exhibition was about twice as big as the Paris Exhibition.

The Chairman then put the vote of thanks to the meeting, and it was heartily agreed to.

Mr. Phillips Fletcher, in reply, said he endorsed what had been said about the illumination of the buildings at night, and as to what Mr. Longden had said, he agreed as to the very successful way in which the Fine Arts Section was carried on. He had lectured on the subject of the St. Louis Exhibition at the Royal Institute of British Architects, and in his present address he had tried not to repeat himself, and in answer to some of the points raised he would refer Mr. Collard to the lecture he gave before the Institute. As Mr. Collard said, the buildings of the Exhibition grew beyond the limits of the original scheme, which was just his (the speaker's) point; a scheme ought to have been prepared which would have been capable of proper expansion. He had a great objection to the use of the word "fireproof," which latter was a printer's error for "fire-resisting" in his paper. With Mr. Collard, he was glad the Exhibition buildings were not finished off internally in plaster, as was intended. As to strikes, there were 200 of various kinds at St. Louis Exhibition, and no doubt there were strikes of plasterers among them. He did not agree with Mr. Collard as to English plasterers. A few years ago the plasterers' trade was in a bad state, but to-day many of the English plasterers turned out good work. As to the use of canvas instead of plaster, he would draw Mr. Collard's attention to the flammability of it; plaster was fire-resisting, but canvas was not. In his report on the St. Louis Exhibition there was a table of the cost of the buildings per foot cube. In one or two cases the Americans had been a little cheaper than Mr. Collard at Earl's Court. His (the speaker's) brother had touched on a point he made in his paper read before the Institute of Architects. It seemed to him that the American architects had a great chance of infusing new life into their work by treating the buildings frankly as temporary buildings, and every one had failed to take advantage of it except, perhaps, the architect of the Washington State building. He knew that the great difficulty would have been the scale, and to have treated anything in half-timbered work in that way was, perhaps, not practicable, but he wished that something had been attempted. The inventive genius of the Americans had failed in this respect.

The Chairman said that this was the last meeting of the session, and the proceedings then terminated.

CONTRACTORS' DEPOSITS.—During the hearing of the case at the Central Criminal Court, when Henry Corbett Jones, solicitor, ex-town clerk of Holborn, pleaded guilty, before Mr. Justice Jelf, to stealing cheques for 2,000*l.* and 9,000*l.*, belonging to the Holborn Borough Council, Mr. Muir, for the prosecution, said that some of the amounts that had been misappropriated had reference to the payments by contractors as compensation for alleged damage done in connexion with certain works; other sums referred to contractors' deposits in respect of tenders. The learned counsel was proceeding to explain the system of contractors' deposits of 20*l.*, when Mr. Justice Jelf (interposing) asked who started the system and how long it had been in existence.—Mr. Muir: I am told, my lord, it dates from time immemorial.—The judge said he regarded this system of contractors' deposits as being full of dangers and temptations. For a contractor to make a deposit in order to get the same advantage as another was, in his opinion, an insidious form of dishonesty.—Mr. Muir: I hope your observations, my lord, will be taken notice of by all the metropolitan boroughs.—The judge: I regard the system as rank bribery.

DINNER TO MR. JOHN BELCHER, A.R.A.

A GATHERING took place at the Florence Restaurant on Tuesday evening, when, in honour of his election as President of the Royal Institute of British Architects, Mr. John Belcher, A.R.A., was entertained at dinner by his past and present staff. The chair was occupied by Mr. J. W. James, and among the supporters were:—Professor Beresford Pite, Messrs. J. J. Joass, P. M. Johnston, W. D. Belcher, A. H. Belcher, A. L. Belcher, T. P. Figgis, A. Needham Wilson, H. G. Ibberson, A. R. Hennell, H. C. Corlette, E. A. Hill, T. H. Russell, R. Lindsay, J. R. Scott, M. Moberly Smith, F. R. Chalmers, Gilbert Robinson, A. R. Conder, H. Anderson, Professor C. M. Reilly, A. F. Murray, L. Detmar, Val Meyer, H. Johnstone, F. J. W. Hart, A. Balfour Paul, H. Hopwood, A. C. Wallace, and A. George.

After the usual loyal toasts, the Chairman, in proposing the health of the guest of the evening, referred to the associations of the staff, both past and present, and their close relationship with Mr. Belcher, whom they all looked upon with so much esteem and regard. He concluded by referring to Mr. Belcher's deservedly high position in the architectural world, and wished him every prosperity and success, with further honours in the future.

The toast was supported by Mr. Joass, as representing the present *régime*; by Mr. P. M. Johnston, as the representative of the pupils who have passed through Mr. Belcher's office; and by Professor Pite, as representing the former members of the staff.

Mr. Belcher suitably replied, and referred in feeling terms to the close friendship and co-operation which had always existed between himself and the members of his staff, and spoke in terms of pride of those who had passed through his office who were now distinguished ornaments of the profession. He concluded by proposing the health of the Chairman, which was duly honoured, and after Mr. James had replied, the remainder of the evening was devoted to conversation and music.

THE BUILDERS' ACCIDENT INSURANCE, LIMITED.

THE twenty-fourth annual general meeting of the Builders' Accident Insurance, Limited, was held on the 29th ult., at Nos. 31 and 32, Bedford-street, W.C., Col. Stanley G. Bird, C.B., V.D., in the chair.

The Report and balance-sheet having been adopted, the retiring directors were re-elected, and Mr. Fox, the auditor, was re-elected.

The Report stated that during the year the Company had received notice of 1,363 accidents, being an increase of 162 over those of the previous year. Notwithstanding the fact that the directors had adhered to the policy of declining to renew persistently bad risks except at an increased rate, they recorded an increase of 19 per cent. in the number of policy-holders, coupled with a slight increase in premium income. The directors observe with regret that the number of small claims is on the increase, and that the average amount paid per accident is also larger than heretofore, but these results were such as were not unanticipated by those who knew how the machinery of the Act was worked. With the object of increasing the Company's business, the directors established an agency in Manchester in the early part of the year, and during the eight months since it was established it has paid expenses.

WESTMINSTER CITY COUNCIL.

THE usual fortnightly meeting of this Council was held on Thursday, last week, at the City Hall, Charing Cross-road.

Improvement of Great College-street.—The Improvements Committee submitted a lengthy report upon a communication from the London County Council on this matter. On the recommendation of the Committee it was agreed to inform the London County Council that the City Council were not prepared to carry out the paving works required, but were of opinion that the work should be undertaken by the County Council.

Baker-street and Waterloo Railway Bill.—The action of the Law and Parliamentary Committee in withdrawing the Council's petition against this Bill was endorsed. The question of the easements for the construction of the proposed new subway is the only point on which the Council and the promoters have not yet come to terms, and the promoters have given an undertaking that the Councils not opposing the Bill in the House of Commons shall not prejudice their opposition in the House of Lords.

Great Northern, Piccadilly, and Brompton Railway Bill.—The House of Commons Committee, having refused the Council's clause for an indemnity against loss to the rates of the City occasioned by the acquisition of property by the Company, it was agreed not to carry the opposition to the upper house.

Building Acts (Amendment) Bill.—Owing to the withdrawal of the major portion of this Bill, it was agreed to withdraw the Council's petition to Parliament.

Inspection of Government Property by Sanitary Authorities.—The Public Health Committee reported having considered a letter from the Metropolitan Borough of Hackney referring to the letter recently circulated by the Metropolitan Borough of Lambeth, suggesting the desirability of Crown property being made subject to inspection by the sanitary authorities. It was agreed to inform the Council of Hackney that the City Council concurred in that opinion.

Having transacted other business, the Council adjourned.

Illustrations.

BRISTOL ART GALLERY.

THIS building has been presented to the city by Sir W. H. Wills, Bart., and was recently opened by Professor Herkomer. It adjoins the present museum, and communicates therewith by two staircases at front and rear, the floors, owing to the fall of the ground, being at different levels. The building is, however, quite complete in itself, and has its own public and staff entrance, as well as an entrance on the basement level for receiving goods. It has also its own refreshment-room, cloak-rooms, offices, etc.

The ground-floor rooms are devoted to museum purposes, the art galleries being upon the first floor, reached by a bold staircase at the end of the central hall, which forms a prominent feature upon entering the building. They form a suite of five large rooms extending round the hall, and are top-lighted. The lighting of the museum rooms on the ground floor presented some trouble owing to the site being rather contracted and surrounded by high buildings; low aisles, top lighted, with clerestories over, and ranges of borrowed lights from the hall above the gallery level have, however, met the difficulty, and the lighting of these rooms, as well as of the picture galleries, is generally pronounced satisfactory. The building is faced with Hartham Park stone, and the central hall and staircase are mainly of the same. The steps throughout are of white marble, and the columns upon the landings are of Greek cipollino. The architraves of the museum doorways are of Pavonazzo, and the woodwork throughout is of walnut.

The work was carried out under contract by Messrs. W. Cowlin & Sons, of Bristol, Mr. Turner acting as clerk of works. The sculpture, which forms a satisfactory feature of the building, was modelled by Mr. E. G. Bramwell, of London, and executed on the spot by Mr. W. Smith, of Bristol. Messrs. Frank W. Wills (Bristol) and Houston & Houston (London) were the joint architects.

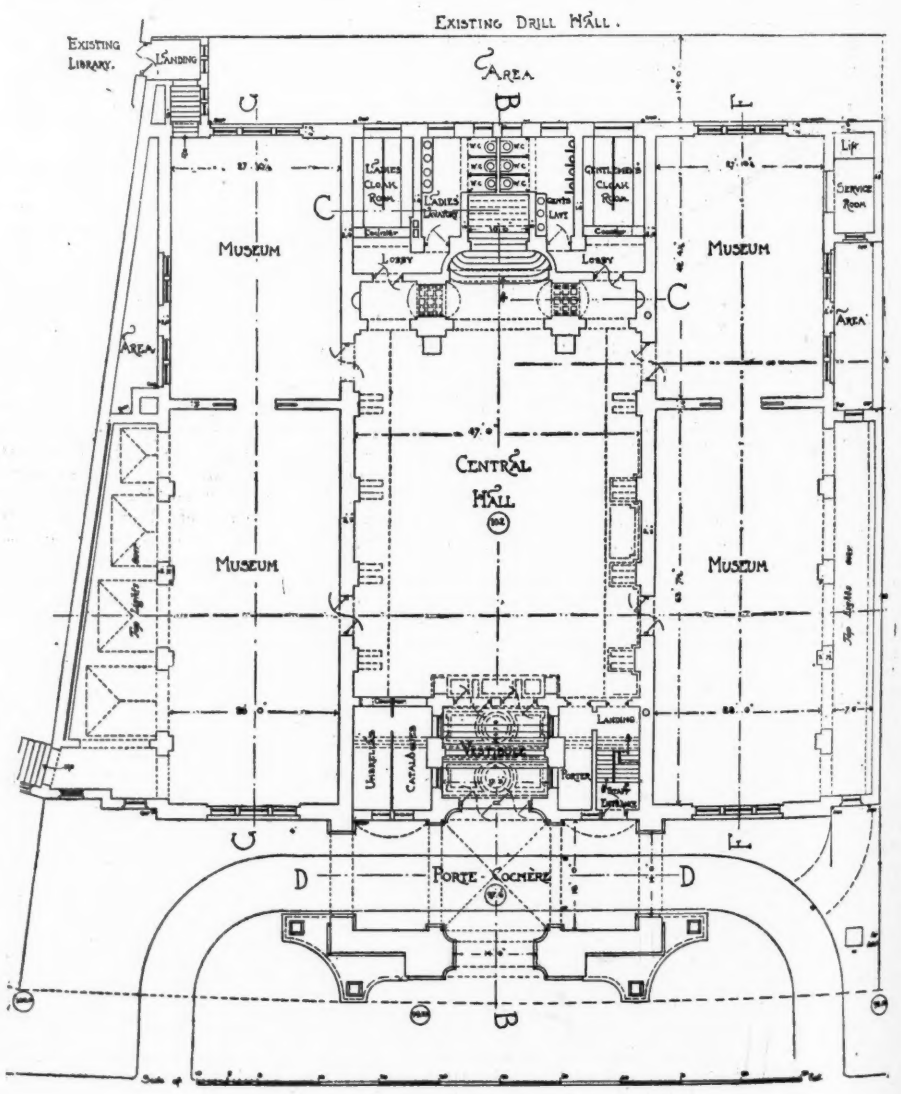
ALL HALLOWS CHURCH, LOMBARD-STREET, E.C.

IN 1903, when the benefice was vacant and there was some discussion as to removing this interesting church of Sir Christopher Wren's, facilities were given by the churchwardens to a group of students from the Royal College of Art for making a survey record of the building.

A complete set of ⅛-scale drawings were made, with working details of many of the wood and ironwork fittings.

The drawings published herewith show one of the door cases to the entrance from the town, drawn by Mr. Walter S. George, and the front of the organ case, drawn by Mr. Wm. Wildman.

Reference may be made to the late Geo. H. Birch's work on "London Churches in the XVIIth and XVIIIth Centuries" for historical notes on the church.



Art Gallery, Bristol. Plan.

THE ARCHITECTURAL ASSOCIATION SPRING VISITS.

VI.—ÆOLIAN HALL, NEW BOND-STREET, AND No. 2, HAMILTON-PLACE, W.

THE interest of the sixth spring visit of the current session, held on Saturday the 8th inst., lay between an important work of modern commercial enterprise and a new West-end house. At the former building, the members of the Architectural Association made a complete inspection of the recently-reconstructed premises of the Orchestrelle Company of New York, known as Æolian Hall, and the courtesy of the management in arranging for the visit was much appreciated.

The process of altering and adapting the well-known Grosvenor Galleries to the purposes of this business, and of fulfilling County Council regulations in respect of the concert hall, has been one of much difficulty; and it was unanimously agreed that the architect, Mr. Walter Cave, had not only successfully accomplished all this, but had produced a work of high artistic merit.

The front portion of the site, formerly occupied by Nos. 135, 136, and 137, New Bond-street, but now used as the entrance-hall and offices of the Company, is the property of the Corporation of London, and is leased upon peculiar terms. The rear part, belonging to the Westminster estate, accommodates the concert hall and show-rooms, formerly used as picture galleries.

In providing the spacious entrance, two party walls on the ground floor had to be cut away, and it is indeed refreshing to find that, in addition to some iron stanchions, the verde antique marble columns which are important details in the decorative scheme perform acts of support to a considerable extent. As a precaution, these marble monoliths were carefully tested before fixing, and each column carries at least 90 tons. The offices for manager, cashier, and clerical staff are cleverly arranged in convenient and inter-accessible positions.

A feature of very great interest to all architects should here be recalled. It is not generally known that the stone and marble ground story of the New Bond-street front is an actual work of Palladio, brought from a church in Venice some years ago by Sir Coutts Lindsay. With the exception of some slight restoration and the carved keystone in the doorway, the whole appears to be genuinely original.

Much of the interior of the building is panelled and fitted up in oak very much in character with XVIIIth century decoration. In the concert hall, which seats 400 people, the panelling is about 8 ft. high in mahogany, relieved with various forms of inlay, and the whole is stained with ammonia to a most pleasing and subtle dark tone. The upper parts of the walls are finished in plaster, in which a number of niches on the east and new windows on the west side are now introduced. The old top light is, therefore, discontinued, a new ceiling hiding the original skylight has been inserted, and the intervening space used for the heating and ventilating of the hall. The stage, semicircular in form, contains a large organ; oak is here used in all the wood construction and decoration to comply with the regulations pertaining to a music licence.

Under the concert hall and at the ground floor level a very large store-room is fitted up as a library for the 450,000 rolls of "Pianola" music. On the floor below is space reserved for music-boxes, the repairing and polishing of instruments and the despatch of goods, while lifts of various forms and sizes are in use in connexion with these departments. Still further down there is a sub-basement, utilised for storing large packing-cases and for heating purposes. It is considerably below sewer level, and is liable to flooding from rains and from the course of the old Tyburn brook, which still runs hereabouts at a low level. A pump worked by a gas-engine is therefore kept constantly at work.

Throughout the premises a pleasing, yet restrained, feeling is seen in the decoration. Special attention has been given to the design of electric light fittings, which are the work of Mr. Bainbridge Reynolds. The design of the leather-covered doors and of the furniture and fitments, for which the architect is responsible, is excellent; indeed, taken as a whole, no more instructive subject for study could have been selected, and the presence of Mr. Cave, who gave exhaustive explanations of all the intricacies of the work, enhanced the success of the occasion.

No. 2, Hamilton-place, Park-lane, a house in course of rebuilding, was then visited, but the state of the work gave little opportunity of seeing more than bare construction. Scaffolding, however, had been removed, and enabled the members to view the front and back elevations. Although window-frames were absent, the Portland stone exteriors have many elements of an unsatisfactory nature; but, in justice to the architects, Messrs. Romaine-Walker & Besant, it should be pointed out that the Crown, from whom the lease is obtained, required that the general features and main lines of the fronts should follow those of No. 5, Hamilton-place. The same restriction was imposed upon Nos. 3 and 4, which have recently been rebuilt.

As we pointed out in our issue of April 1, this desire for uniformity is a commendable effort upon the part of this governing authority, but again the conditions did not admit of practical accomplishment. Apart from the fact of its being at a considerably higher level, the "example" has proportions and grouping totally different from the three fronts which have been made to sympathise with it. The resulting confusion and loss of rigour are characteristics which otherwise would not have been excused.

The house has a straightforward plan, and the interior has promise of dignity. The working departments in the basement, of which the kitchen is located below the garden, are simply and conveniently contrived. It is estimated that the house will cost when complete 46,000*l.*; a little of this outlay could be saved, and the house gain much in artistic value, if paint were omitted from the teak window-frames and casements

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

AT the eleventh meeting of the session of the Discussion Section of the Architectural Association, held on the 29th ult., Mr. K. Gammell, A.R.I.B.A., read a paper on "The Planning of Buildings and the Safety of the Public." The subject was taken under the following heads or types:—Buildings used for Secular purposes, for Religious purposes, for both purposes, Stores, Restaurants, and Reception-rooms.

Under the first group came theatres, concert halls, town halls, churches and chapels of various denominations, many plans of which, specially prepared for the occasion, were shown on the screen to illustrate the points in the paper. Large scale diagrams showing suggested modifications or improvements in the arrangement of the seating, corridors, stairs, exits, etc., were also displayed and referred to. The staircases from galleries were, in particular, dealt with, and the necessity for keeping them entirely separate from other parts of the same building was emphasised. Some of the plans shown were incredibly bad; yet it is to be feared they were not very exceptional or exaggerated instances: halls and places of worship from which, in the event of panic, the chances of escape without disaster were somewhat remote, to say the least, seemed to be the rule rather than the exception. Exit doors leading on to a balcony with no means of descent therefrom ought not to be permitted. The balcony became a trap, and such an arrangement is known to have added considerably to the death roll in the Chicago theatre fire. A warning note on "stores" was sounded. Such places of business and resort have, as often as not, grown by the adding of shop to shop of more or less out-of-date construction and plan, altered or added to as necessity demanded, and full of highly inflammable goods, and, during the busy seasons of the year, crowded with people in their hundreds or thousands. In such "stores" lifts for passengers and for goods may usually be found, thus adding yet more to the danger from the rapid spread of fire. Such stores, as well as restaurants and hotels, not having music licences, did not come under the regulations of the London County Council, and were, therefore, free of much-needed restraint.

Of matters in detail: a 1½-in. hydrant, with a length of hose-pipe, ought in all cases to be provided in addition to hand-buckets, which latter are often, as in the case of a certain London theatre, out of reach of anyone under average height, so far as being able to get at the bucket without losing half its contents was concerned. No light or flimsy seats should be permitted in any hall or place where the public gather, and all seats should be securely fixed to the floor. Exit doors should open both ways. All angles in exit passages should be rounded and the corners filled up to shoulder height; and no unnecessary spaces which are likely to encourage the practice of standing to watch a performance should be allowed. Exit stairs should be in direct alignment with exit corridor; no refreshment or other room to open directly off a main exit corridor. In theatres the use of a permanent hanging valance to upper part of proscenium opening should be abolished and the opening made of the proper size. In his opinion it would be quite possible to treat the wall space above it architecturally. Again, the ceiling ventilator, towards which draughts and flames are inevitably drawn in the event of fire, might, with much increase of comfort and safety to those in the upper parts of the house, be placed nearer the proscenium arch, away from the centre of the auditorium without necessarily jeopardising artistic effect. He took exception to some of the so-called automatic bolts in use to-day, which were automatic only in name, also to the illuminated type of exit notice in use in some London theatres.

A much sounder way of indicating an exit was by the judicious placing of lights in the passages, as shown in the diagrams on the screen, and similar to the method adopted on some railways of indicating the name of the station by hanging a flat glass plate, with name painted on, in front of the platform lamps; the reason for this being that exit notices were often not illuminated, whereas the lights in exit passages must be kept alight if the exit was to be of use.

At the conclusion of Mr. Gammell's paper a communication from Mr. W. E. Riley, the Superintending Architect to the London County Council, who was unable to be present, was read. Mr. Riley emphasised the need for attention to the safety of the public in stores and hotels. The disaster at the Hotel Windsor in 1899 was an instance of what might not improbably happen again. There the walls were to a large extent lined with boarding with cavities behind, and the inflammable gases generated by heat spread all over the building, and, suddenly becoming ignited, involved the whole fabric at the same time. Open balcony staircases were valuable adjuncts when constructed of incombustible material, and when approached from balconies through fire-resisting and self-closing doors such staircases could not easily become smoke logged. The provisions of the Factory and Workshop Act in this connexion were well worthy of perusal. The disguising of doors other than exit doors was to be commended; it had been well done in some of the more recent theatres. It did not, Mr. Riley thought, detract from the architectural treatment as it emphasised the more important doors. As regards slopes in lieu of steps, these should undoubtedly be provided where only one or two steps were involved, and, if the site would permit, it would be conducive to safety if steps and stairs could be abolished altogether in public places.

The discussion was opened by Mr. R. H. Weymouth and continued by Messrs W. Paul, J. H. Pearson, Gilbert H. Lovegrove, W. Wonnacott, A. H. Belcher, Stanley Towse, Louis Ambler, and Mr. H. Gregory Collins (the Chairman).

In summing up the discussion, Mr. John Murray, the Special Visitor, said that panic had rightly been emphasised as a greater danger than fire, but that even with the most elaborate provisions and regulations, unless there was a proper and efficient system of supervision, little practical good would result. The difficulties of dealing effectively with existing buildings—some of which were much in need of remodelling—were very great, and improvements could only be effected gradually. Mr. Murray detailed an instance which had come under his notice as regards the rapid spread of fire, and where the flames had followed the paint on the joinery, and had, with the aid of draughts, travelled from the ground floor to the upper rooms without seriously damaging the woodwork. The affinity of fire for paint was here evident, and he pointed to the desirability of using a fire-resisting paint. He did not altogether agree with the views expressed in regard to panic bolts; there was certainly room for improvement in the patterns at present available, but a panic bolt needed regular inspection, and this, he was afraid, it did not always get. Slippery steps and pavements were to be avoided—marble and the artificial stones were to be avoided on this account. Short of

absolute regulations clients simply would not permit space which they wanted for seating accommodation to be taken up with exits and stairs! Provincial and country authorities ought to deal with the regulating of places of public resort on similar lines to the London County Council.

THE SURVEYORS' INSTITUTION.

A MEETING of this Institution was held on Monday at No. 12, Great George-street, S.W., Mr. H. T. Stewart, President, in the chair.

The minutes were read and confirmed and some donations to the Library were announced by Mr. Percivall Currey, Hon. Secretary, a vote of thanks being accorded to the donors.

Mr. Julian C. Rogers, Secretary, read the balloting list of officers for next session. Mr. C. Bidwell is nominated as President.

Farm Buildings.

Mr. H. Munro Cautley then read a paper on "Farm Buildings"—the title of a paper he read before the Architectural Association recently, and reported in full in our pages.*

After dealing at length with site and position of the buildings, with stables, cowsheds, etc., etc., he referred to buildings for small holdings, and said it had been suggested that the solution of the problem was to build four walls covered in with a roof, and then partition it up as the need arose, but he was glad not to have to find a tenant for such an arrangement. If the tenant of a small holding was to compete with the big farmer, he must be equipped with buildings in which he would find equal facilities, and every labour-saving arrangement must be found in their design, so that his personal labour, which would count for so much, might be economised as far as possible. The other consideration of importance was that the cost of construction should be kept within such bounds that the landowner might be able to meet it. In the sketch plan he had prepared he had tried to meet some of these requirements. It was of the conventional shape in which the buildings enclosed and sheltered a yard, and with the administrative block on the north side two stories high. Part of the lower story was occupied by a mixing floor, and the remainder by stables and a portion of the cow-stalls, while the upper story, which was a roomy loft with plate 6ft. 6in. high, was partitioned off into a granary over the stables, the rest to be used as a straw and hay store, and for chaff-cutting. This seemed to him to present a workable, compact, and yet economical arrangement, for a good deal of roofing was saved over the stables and cowsheds, which also gained comfort from the superimposed building (an important factor in a case such as this where the necessary cheap roofing was not always the warmest), while the benefit of barn space was not lost with such a commodious upper floor as he proposed, into which a stack could be threshed direct. Hay or straw, too, could be served direct into the different departments, or bundled out into the yard through side doors, and he should propose large trap-doors over the gangway, so that a cart under cover could be loaded up from this floor with chaff or hay, and corn from the granary. Chaff-cutting is conducted directly over the mixing floor, on to which a shoot would take the chaff, whilst the chaff for the stables would be carried through the granary and shot through a trap into a bin there. The mixing floor was paved with concrete, and with the movable partition (shown next the gangway) in position, there would be convenient corners both for roots and for the prepared foods. The stable had three stalls, the cowshed had accommodation for seven cows or bullocks, whichever might be wished, and both were fitted with mangers and stall divisions, and had direct communication with the yard. The further accommodation flanked the yard on either side, and comprised a range of three pig-pens with meal and boiling-house attached, together with cart-shed, shelter-sheds, and loose-box. He proposed to make it a timber-framed building, sheeted with 1-in. stout weather boarding for warmth, the whole of the outside woodwork tarred or treated with carbolineum. A 9-in. brick pinning 2 ft. high would be provided throughout, so as to make the life of the woodwork as permanent as possible, and this pinning would be carried up 5 ft. in the case of the mixing floor, or 4 ft. 6 in. to form the walls of pig-pens. The floor joists to loft would be 9 in. by 3 in., and at each principal stud secured to the framing with iron dogs, and the flooring would be 1¼ in. grooved and tongued. The principal economy must, however, be effected in the roof. Except for that over the two-story block, which would be a quarter-pitch span with 5-in. by 2-in. tie, the rest of the roofs would be simply constructed with 5-in. by 2-in. rafters lying across from plate to plate, with a very slight fall and 3-ft. centres, this measurement applying to the rafters throughout. If the rafters were carried over the plates at head and foot a distance of 2 in., and finished with deep facias so as to thoroughly keep out the weather, efficient ventilation would be provided. A considerable saving was also effected by one length of guttering only being necessary to each range.

For a roofing material he should propose Ruberoid. With galvanised iron the extremes of heat and cold were so great, whilst there was always the annoyance of condensation, and the expense of tar and paint if it was to be made lasting. He had used a good deal of Ruberoid, and he believed it to be 40 per cent. lighter and 20 degrees cooler than iron. It was, further, cheap, easy to lay, and requires no coating, and, what was most important, did not contaminate water, so that the cattle could drink what was collected from the roofs. Lastly, it could be turned up against a building to form a gutter, where lead would otherwise have to be employed. But whichever material was employed he should advocate the use of ⅝-in. boarding on the top of the rafters to ensure real comfort in the sheds, and with that one might call the buildings, as described, permanent structures.

Finally, as to the cost, he had received an estimate for the buildings exactly as shown on his drawings, with stall-fittings, concrete floors, etc., etc., complete, of 270*l.* This was a builder's estimate for erecting it in his (the author's) own neighbourhood, and went far to prove that the cheapness in construction aimed at had been attained. It worked out at 1½d. per ft. cube for the buildings, and 1s. 2d. per sq. ft. for the entire area, including yard. Of course, even this estimate could be reduced if galvanised iron was employed for the roof, without boarding underneath, this latter being worth 17*l.* 10s. in the case before them; and another great saving would be made if the foundations were formed with cement concrete 6 in. in and 6 in. out of the ground, the outer edge canted and rendered, and the plate bedded on the top of the same. But with this arrangement the lower part of the work was so splashed with rain that much of the permanency obtained by the brick-pinning was lost. He should have liked to discuss the alteration and reconstruction of old homesteads, the merits—weighing its good effect—of elm weather boarding at 17s. per square, as compared with ordinary 1-in. weather boarding at 12s. 6d., and many other little points of detail and construction, but he would conclude with only a few remarks on that very necessary part of the homestead—the home. They should not waste their client's money when building a house for a 100-acre farm in providing a second sitting-room, with a water-closet, or perhaps hot and cold water laid on. It would never win a tenant from the class of men who would wish for so small a holding, but, on the other hand, they would have difficulty in getting a tenant for a farm of larger acreage nowadays, unless most of the luxuries to be found in a modern two-sitting-room house were present. In striving after compactness they should not put their house so close to the stocksheds that after its erection one or other was proclaimed by the sanitary authorities uninhabitable. This might sound very superfluous advice, but he had actually known such cases. Particularly remember, too, that in some particular quarter the wind prevailed, and it would be most unfortunate for the inmates of the house if it was so placed that for the large percentage of days in which the wind was in that quarter all the stench from the stockyards and the dust from threshing gets blown into the house. Lastly, if there was a dairy in conjunction with the house, do not, if possible, attach it direct to the kitchen or back-house, but interpose at least the larder or some other small building, to intercept any heat, steam, or smell that might otherwise get in. The roof, too, should certainly not be of slates, but of tile or thatch; and besides the inevitable north window, to get a fresher current of air, he liked another window east or west, which could be sheltered by trees and bushes grown outside. With regard to the shelves round the settling room, if the back edge was kept out from the wall it would insure a freer passage of air about the pans and a cleaner dairy, for there would then be no corners for the dirt to lodge in and elude the cleaner. It was customary to whitewash dairies throughout, but the whitewashing had better not extend down to the shelves, or the pans, being pushed carelessly back, would flake it off and give the real comic-paper article of milk with chalk in it. One or two rows of any kind of tiles would obviate this, and would look well. Finally, the ceiling should be plastered, and fly-proof gauze should be fixed on frames outside windows, and easily removable for cleaning.

A vote of thanks to the author was proposed by Mr. C. Bidwell, seconded by Mr. C. J. Mann, and supported by Messrs. Woolley and Sabine, and heartily agreed to.

Mr. Cautley having replied, the meeting terminated.

The next meeting will be held on May 15, when Mr. J. D. Wallis will read a paper entitled, "The Licensing Act of 1894, with Special Reference to Compensation and Monopoly Value."

* See our issue for November 28, 1903.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring Gardens, S.W., Mr. E. A. Cornwall, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Bermondsey Borough Council 8,488*l.* and 2,800*l.* for purposes of the Housing of the Working Classes Act, 1890; Camberwell Borough Council, 6,500*l.* for paving works, and 2,797*l.* for works at wharf and depôt; Hammersmith Borough Council, 31,000*l.* for purchase of land for a cemetery; Islington Borough Council, 2,829*l.* to repay outstanding balances of loans; Poplar Borough Council, 10,000*l.* for paving works; and Wandsworth Borough Council, 4,535*l.* for purchase of property. Sanction was also given to Paddington Borough Council for the borrowing of 5,816*l.* for reconstruction of Warwick-road Bridge.

Discovery of a Marble Tablet.—The Records and Museums Committee reported that an interesting marble tablet has been discovered during excavations in Vere-street, in connexion with the Holborn to Strand improvement. The tablet represents a man seated with a youth standing before him, and bears an inscription in the Greek language. Dr. Haverfield, of Christ Church, Oxford, has kindly investigated the inscription, and states that the tablet is sepulchral in origin, and that although of an ancient date, it is probably a modern importation into this country. The tablet is to be preserved for the present at the Horniman Museum.

Ruskin Park.—The Parks and Open Spaces Committee recommended that the Council should contribute 25,000*l.* towards the purchase of 24 acres of land at Denmark-hill for the purposes of an open space. The land will cost about 50,000*l.*, and the balance of the purchase-money will be found by contributions from local authorities and from private persons who are anxious that the land should be secured as a public park in memory of John Ruskin, who for some period resided in this neighbourhood. The park will be vested in the Council, who will do the necessary laying out and fencing, which is estimated to cost 5,500*l.*

The recommendation was adopted without discussion.

London Building Acts (Amendment) Bill, 1905.—The Public Health Committee reported as follows, the recommendation being agreed to:—

The Parliamentary Committee have informed us that, as the result of a compromise arrived at at the House of Commons between the members of Parliament in charge of the London Building Acts (Amendment) Bill and of the City of London (Escape from Fire) Bill, it was agreed to drop all parts of the Council's Bill with the exception of Part VIII. (Means of Escape from Fire).

The portion of the Bill thus dropped contained, among other provisions, clauses—

To provide that factories, warehouses, etc., shall not be erected upon open spaces which are surrounded by dwelling-houses, and upon which dwelling-houses would be prohibited on account of lack of air space.

To make better provision for the lighting and ventilation of habitable basements.

To require a certain amount of open space at rear to be provided to domestic buildings other than dwelling-houses at ground level in old streets when rebuilding.

To require provision of open space about all domestic buildings not abutting upon a street.

To provide for the maintenance at all times of the open space provided in accordance with the Acts.

To provide that open spaces behind houses shall be larger than the present Act requires.

To provide that sufficient open space shall be provided to allow of the means of access to the inspection chamber required under the Public Health By-laws for the purpose of disconnecting the drain from the sewer being placed outside the building.

To require the space at the rear of all buildings used solely for dwelling purposes, in streets laid out before the commencement of the Act of 1894, to be provided at the level of the adjoining pavement.

To require that courts for providing light and air shall be provided in the centre or interior of new buildings exceeding 150 ft. in depth.

To amend the provisions relating to courts for admitting light and air to domestic buildings so as—

(*a*) To make a minimum provision for the ventilation to a court enclosed on every side.

(*b*) To make it clear that the window referred to in the provisions is intended to be a window provided to comply with the rules as to habitable rooms.

(*c*) To omit from section 45 of the Act of 1894 the provision that a court of which the greater dimension does not exceed twice the less dimension shall be held to comply with the section if a court of the same area but square in shape would comply therewith.

(*d*) To reduce the depth allowed for a court open on one side and to make the rules as to windows to habitable rooms apply to any window to a habitable room, including a room in a basement.

(*e*) To limit the height of walls in which there are any windows, which are required to be provided by the rules as to habitable rooms, opposite to any land or building which is or is intended to be in a different occupation.

(*f*) To make the provisions relating to courts for admitting light and air to "domestic buildings" apply to offices and counting-houses.

(*g*) To make provision with regard to a window placed obliquely in a court or recessed.

To prohibit, except under certain conditions, the erection in ways laid out for foot traffic only of dwelling-houses of a greater height than the width of the way.

To provide that in new streets no building shall exceed in height the distance between buildings on opposite sides of the streets.

To make the provisions as to the height of buildings in streets of a less width than 50 ft. apply to streets formed before 1862 as well as to those formed subsequently.

To prohibit the erection, and to control the height, of buildings (other than domestic buildings) within specified distance of buildings of the domestic class.

To require that all staircases shall be adequately lighted.

To make the minimum height of habitable rooms (not wholly or partly in the roof) 9 ft., instead of 8 ft. 6 in., as at present, and the height of habitable rooms (wholly or partly in the roof) 8 ft. 6 in. instead of 8 ft. as at present.

To provide that the minimum space that shall be left between the ground and the underside of the floor joists shall be 6 in., and to require the provision of openings for ventilation the minimum size of such openings to be 9 in. by 6 in.

To provide that a habitable room constructed over a stable, coach-house, or harness-room communicating therewith, shall be separated horizontally and vertically from the stable by a solid concrete floor or partition, finished smooth upon the surface, properly supported, and of a minimum thickness of 6 in.

To enable the Council to make by-laws with regard to the erection of houses on excavated sites and on sites which are damp and have been heavily manured.

The clauses dealing with these matters were drafted in consultation with us, and, in our opinion, contained proposals of great importance to the public health of the inhabitants of the administrative county; and we are strongly of opinion that the Council should take action at an early date with the view of securing legislation on the lines of these clauses. We recommend—

That the Council do concur in the view that many of the provisions contained in the clauses of the London Building Acts (Amendment) Bill, which have been dropped during the present session of Parliament, are of great importance from the point of view of the public health.

The Coliseum Revolving Sign.—In reply to a question on the report of the Building Act Committee—

Captain Hemphill (Chairman of the Committee) said that jurisdiction in the matter of sky-signs in London was in the hands of the Borough Councils, the County Council only acting in their default. In the matter of the revolving sign on the Coliseum, the Committee had communicated with the Westminster City Council, inviting them to take action. They had now received an answer from the City Council, saying that they were proceeding in the matter.

Tenders for Pier Work.—The following recommendations of the Rivers Committee were agreed to:—

That the tender of Mr. J. R. Beckett, amounting to 187*l.* 16s. 3d. for repairs and alterations to Hammersmith Bridge pier be accepted.

That the tender of Messrs. Shelbourne & Co., Limited, be accepted in respect of repairs and alterations to Chelsea (Carlyle) pier, at the amount quoted by them for the pier, viz., 1,233*l.* 17s. 4d.

That the tender of Mr. J. R. Piper be accepted in respect of repairs and alterations to Chelsea (Cadogan), Battersea-park, and Pimlico piers at the total amount quoted by him for these piers, viz., 2,551*l.* 10s. 2d.

That the offer of the Westminster Construction Company, Limited, to execute the repairs and alterations to Battersea-square and Nine Elms piers for the sum of 2,492*l.* 2s. 5d., as an extra to their existing contract in respect of Millwall, Hammersmith, Putney, and Wandsworth piers, be accepted.

That sub-letting under the contracts referred to in the foregoing recommendations be allowed in the undermentioned cases:—Mr. J. R. Beckett, water and gas supply, to Mr. Byron Hunt. Messrs. Shelbourne & Co., ironwork to pontoons and dolphins, to Messrs. Edwards & Co., Limited; ironwork in straps, etc., to Messrs. Rubery & Co.; bolts, nuts, etc., to Messrs. D. Wilkes, Limited; castings, to Messrs. Edie & Co.

That the repairs and alterations at the following piers, Cherry-gardens, Globe, Thames-tunnel, Surrey Commercial Docks, West India Docks, and Greenwich, be carried out by the Works Committee as a jobbing work, and that expenditure not exceeding 3,000*l.* be authorised for the purpose.

Manor Asylum: Laundry, Bakery, etc.—It was agreed that, subject to the passing of the annual maintenance estimates, and to the approval of the necessary plans by the Home Secretary, expenditure of a sum not exceeding 1,610*l.* for the enlargement of the main kitchen, the bakery, and the laundry at the Manor Asylum, be sanctioned.

Tramways: Position of Mains.—The following recommendation of the Highways Committee was agreed to:—

That expenditure, on capital account, not exceeding 26,000*l.* be sanctioned in connexion with the removal, lowering, or diversion of mains, pipes, wires, etc., necessary in connexion with the reconstruction of the tramways from Westminster-bridge and St. George's-circus to North-street, Wandsworth, together with the lines in Falcon-road; that the Highways Committee be authorised to make arrangements with the Metropolitan Water Board and the several companies concerned to carry out the work at the cost of the Council: and that the seal of the Council be affixed to any contracts or other documents which may be deemed necessary in connexion with the matter.

The Proposed County Hall.—There was on view in the members' lobby a water-colour drawing of the proposed new County Hall and Administrative Buildings, which the Establishments Committee recommend should be erected on the Embankment almost opposite the Houses of Parliament, and in the Council chamber itself were hung large cartoons showing the ground plan and the contiguous sites. During the afternoon the following details, prepared by Mr. W. E. Riley, the superintending architect, were circulated. The consideration of the proposal stands over until the next meeting of the Council, in accordance with the by-law to the effect that seven clear days' notice must be given of any expenditure involving a sum of over 5,000*l.*:—

A perspective drawing has been hastily prepared showing the possibility of a dignified architectural treatment of the river façade. Both the sketch and the cartoon plans are intended to be merely indicative of the capabilities of the site in relation to the immediate surroundings, and are not intended as other than sketch schemes, which would be considerably modified as a more matured plan is formulated. As shown on the drawings, the lower Embankment could be made accessible to the public, thus continuing the treatment in front of St. Thomas's Hospital, and thereby adding architectural dignity to the river frontage, whilst the terrace at the higher level is intended for the use of members only, and would be approached from the reception, committee, and other such rooms.

The whole of the administrative offices, comprising the above rooms, council-chamber, lobbies, committee-rooms, members'-rooms, chairmen's-rooms, lady members'-rooms, and additional rooms adjoining thereto, could be arranged on the principal floor, the offices being accessible from an entrance in an inner quadrangle approached by a carriage-drive from Belvedere-road, which will be widened to at least 50 ft. Minor entrances for the public and staff could be provided on the Belvedere-road and Westminster Bridge approach, and by this arrangement ready access would be obtained to all parts of the building, and thus avoid the congestion of the traffic which might possibly occur with entrances on one front only.

The river at this point runs nearly due north, and, the site being approximately parallel with the river, three important façades would be respectively on the south, east, and west aspects; the maximum of sunlight would thus be obtained throughout.

In the middle portion of the river façade might be placed the council-chamber and committee-rooms, which could be grouped around a central feature, and, in this position, would be subject to a minimum of the external disturbing influences of traffic and noise.

To improve vehicular approach, and also the lighting of the lower floors on the east frontage, the width of Belvedere-road will be widened. The leading frontages will be 800 ft. to the river, to the bridge approach 240 ft. and to Belvedere-road 760 ft. It will be seen that access is obtained on three sides of the proposed building, and an important improvement initiated on that side of the river; for the purpose of comparison, the frontage of Somerset House is about 550 ft.

On the basis of 150 super. ft. for each officer, the building will accommodate 2,589 officers, and allows 61,790 sq. ft. for storage accommodation; the present number of officers is 1,665.

The approximate estimated cost of the building, foundations, and embankment, as indicated in the sketches above described, is 1,100,000*l.*

A flight of steps at present exists on the south-west corner of the site, and it would appear to be necessary to provide public access to the river at that point. The effect of this on the plan would require to be carefully considered hereafter.

The aim would be in maturing such a scheme architecturally to treat the exterior of the building in a simple and dignified manner, to exclude all useless ornament, and to depend more on the proportion of the masses to attain dignity and fitness in the appearance of the building.

This would probably be best answered by constructing the whole of the external façades in Portland stone. It would add to the appearance and beauty of the position to plant such trees and shrubs on the lower terrace as the exigencies of the traffic would permit.

Trafalgar-square.—Sir Melvill Beachcroft moved that Tratalgar-square stands much in need of improvement, and might at a very moderate cost be made as attractive as a place of public resort occupying so important and central a position in London ought to be, and that it be referred to the Parks Committee to consider and report what, it any, proposal could properly be made on the subject to the First Commissioner of Works. He thought that the present time, when the new street was being brought into the square, offered them a good opportunity for going to the Government and asking for leave to adorn the square by providing seats and laying out flower-beds and parterres.

Mr. Stuart Sankey seconded the motion.

The motion was rejected by 37 votes to 25.

The Council soon after adjourned.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

Strand.†—Two iron and glass shelters to a proposed extension to the Flower Market, Covent Garden, to abut upon Wellington-street and Russell-street (Messrs. Lander, Bedells, & Crompton for His Grace the Duke of Bedford, K.G.).—Consent.

Hackney, Central.†—Buildings upon a site abutting upon the western side of Chatham-place and southern side of Belsham-street, Hackney (Messrs. Hodson & Whitehead for Messrs. Hodson & Rowlandson).—Consent.

Lewisham.—Two houses, with one-story shops in front, upon the site of No. 117, Rushey-green, Lewisham (Messrs. Norfolk & Prior for Mr. S. S. Brush).—Consent.

Lewisham.—Three houses, with one-story shops in front, upon the site of No. 119, and part of the site of No. 117, Rushey-green, Lewisham (Mr. A. W. Osborn for Mr. H. F. Page).—Consent.

Hampstead.†—Six buildings upon a site abutting upon the south-western side of Finchley-road and northern side of Lymington-road, Hampstead (Mr. W. A. Rabson for Mr. W. F. Cave).—Consent.

Marylebone, West.—Enclosures to a porch at No. 7, Mandeville-place, St. Marylebone (Mr. F. Cornelius-Wheeler).—Consent.

Width of Way.

Wandsworth.—Five houses on the northern side of Blackshaw-road, Tooting, eastward of Maybury-street (Mr. W. Wright for Mr. S. Blaker).—Consent.

Wandsworth.—A deviation from the plans sanctioned for the formation or laying out of a mews out of the west side of High-street, Putney, next No. 104, so far as relates to the formation of the mews and the erection of a one-story stable at the end of the cart-shed (Mr. F. J. Brewer for Messrs. Spencer, Santo, & Co., and Mrs. M. Maxwell).—Consent.

Camberwell, North.—Buildings upon a site abutting upon the north side of Canal-bank and east side of Canal-street, Camberwell (Mr. R. A. Jack for Messrs. Findlater, Mackie, & Todd).—Consent.

St. George-in-the-East.—Buildings on the northern side of Brewhouse-lane, Wapping (Messrs. Cheston & Perkins for the Governors of Bridewell Hospital and Messrs. Taylor Brothers).—Consent.

Width of Way and Lines of Frontage.

Brixton.—A one-story shop on the northern side of Station-road, Brixton, westward of Canterbury-road, with external walls at less than the prescribed distance from the centre of the Roadway of Station-road (Mr. A. B. Matthews).—Consent.

Lines of Frontage and Construction.

Hammersmith.—The retention of temporary buildings erected on a site on the east side of Old Oak-road, Hammersmith, and south side of Aldbourne-road (Messrs. Barnett & Brotchie).—Consent.

Formation of Streets.

Fulham.†—That an order be issued to Mr. A. Blackford, sanctioning the formation or laying out of a new street for carriage traffic to lead from Fulham Palace-road to Colehill-lane; Fulham, and, in connexion with the formation of such street, the erection of buildings (for Mr. L. Harris).—Agreed.

Woolwich.—That an order be issued to Mr. F. Bethell sanctioning the formation or laying out of new streets for carriage traffic on

the Bostall Estate, Woolwich, to lead from Bostall-hill and Bostall-lane to McLeod-road and Blithdale-road, and, in connexion therewith, the widening of a portion of Bostall-lane (for the Royal Arsenal Co-operative Society, Ltd.).—Consent.

Fulham.—For an extension of the period within which new streets on the London Bishoprick Estate, Fulham Palace-road, Fulham, were required to be defined and thrown open to the public as highways (Messrs. Cluttons for the Ecclesiastical Commissioners). —Refused.

Means of Escape at Top of High Buildings. Strand.—Means of escape in case of fire, proposed to be provided in pursuance of section 63 of the Act, on the seventh (top), sixth, and fifth stories in the occupation of the Metropolitan Water Board, of the Savoy Hotel offices, west block, Strand, the upper surface of the floors of which stories are above 60 ft. from the street level, for the persons dwelling or employed therein, and the erection of an open gangway across Carting-lane at the sixth floor level in connexion with such means of escape (Messrs. Collcutt & Hamp for the Savoy Hotel Company, Ltd.).—Consent.

The recommendations marked † are contrary to the views of the local authority.

ARCHITECTURAL SOCIETIES.

DEVON AND EXETER ARCHITECTURAL SOCIETY.—The annual meeting of the members was held at Tavistock on the 8th inst. There were present Mr. Charles Cole, of Exeter, President; Mr. B. Priestly Shires, Plymouth, Vice-President; and others. The annual report was read by the Hon. Secretary, Mr. A. J. Pinn, of Exeter. It stated that the membership had been maintained, and that the roll-call now stands at 50 members; associate members, 10; associates, 27: total, 87. Since the last annual meeting thirteen meetings—eight being Council and five general—have been held, and some useful work has been done in the interests of the profession; but the Council regret that the response from principals was insufficient to warrant them embarking upon a scheme of lectures in connexion with the London Architectural Association. The Council were indebted to them for making arrangements whereby students of the Devon and Exeter Architectural Society may join the School of Design. Visitors' criticisms will be written upon the drawings; and at the close of the session Mr. G. H. Fellowes Prynne will visit Exeter, upon a date to be fixed, and criticise a selection of the best designs submitted during the session, which will be exhibited at Exeter. A guinea book prize is offered to the competitor whose designs are placed first in merit. The Council regret the absence of enthusiasm among the associates, as evidenced not only by the rare attendance at meetings, but by the lack of competition for the prizes offered by the Society. For the measured drawings only one set was submitted, but they were deemed worthy of the prize, which was accordingly awarded to Mr. Harold S. Shires. No sketches were submitted for the Hon. Secretary's prize. In accordance with the request of the R.I.B.A., it was resolved that the President be appointed a member of the Seventh International Congress of Architects in London, 1906. On December 13 a discussion on "Ownership of Plans," as affected by recent cases, was opened by the Hon. Secretary, and it was resolved that, it being the custom that the drawings are retained by the architect, a communication be made to the R.I.B.A. calling their attention to these cases, and asking them to take steps in the matter. On March 2 a discussion on "Standard Sizes of Materials" resulted in a communication being made to the Secretary of the Clayworkers' Institute asking him to bring before the local brickmakers for their adoption the standard sizes of bricks as agreed to with the R.I.B.A. —Mr. O. Ralling having read the balance-sheet showing a satisfactory state of funds, it was adopted. The retiring President, Mr. Cole, then delivered his address, in the course of which he said: You will remember possibly that your Council, so far back as September last, endeavoured to ascertain if something could not be done in the matter of providing the younger members of the profession with a definite scheme for their better education in professional knowledge and practical work on well-arranged lines, as distinct from the ordinary routine of the drawing-office, and negotiations were opened with the Architectural Association with a view to obtaining the services of gentlemen willing to give lectures in various places in the provinces; but I am sorry to say there was so much apathy that it was felt impossible to proceed, and as the expenses would have been, comparatively speaking, very great, the Council reluctantly dropped the scheme. Your Council also appointed a sub-committee to deal with the question of by-laws, more particularly as regards Exeter, whose City Council intend to redraw and remodel those now in existence. The town clerk has kindly expressed his willingness to allow us to lay our views before him. On the general question of by-laws, so much has been written and said lately that one hardly knows whether to let this burning question go on burning or add more fuel to the flames. Of course, there must be by-laws, that everyone admits; but the model by-laws one would fancy were drafted by men who had never done any practical work at all, and, as all local authorities copy them to a great extent, we get some very curious anomalies. They must not introduce any clauses suitable to their locality, or make any of them at all elastic, or the Board above will refuse to sanction them. So we get this strange state of affairs: A little one-house town in the wilds of No-where has the same by-laws as a large city, which is preposterous. The effect of some by-laws is that in large towns many old buildings are not pulled down and rebuilt, because in addition to light troubles and party-wall questions, which bulk largely, the unfortunate architect has still to deal with the local authority, whose views are often—well, I will say, "quaint." If there were any elasticity many a client would rebuild entirely, instead of "tinkering" by taking out a floor, putting up a new front, and so on, often involving a great deal of trouble and anxiety, and a liberal use of steel or ironwork. Even if a new building did not quite comply with all the cast-iron rules of the powers-that-be, it must be a great sanitary advance on an old timber building crusted with age and other things in its numerous cavities and worm-eaten woodwork. Perhaps one of the most irritating features of the whole thing is that, where a local authority is willing and anxious to frame sensible by-laws to suit its locality, the Local Government Board will have none of them; but the question is interesting the man in the street. He begins to see now why all the houses are built alike in a new street; why there are no wooden bays or good half-timber work. I am glad to say that progressive Exeter does allow the two latter, and has also approved of bay windows projecting over our streets, so that architects get some chance of breaking up a front. . . . In speaking of the registration of architects, Mr. Cole said that it was gratifying to a great number of provincial architects to know that the premier body had come to the conclusion that something must be done, and had actually done something. "With a proper legal status, were we more united, I do not think the courts would ride rough-shod over us as they often do now. Take the ownership of drawings question; 'it is only an architect's matter'; and the greatest injustice is done; the drawings are only the means to an end, and yet forsooth a cantankerous client, even if he cannot understand which is the right side up of a plan, may insist on having the drawings handed over to him. They are of little service, and nowadays not even drain plans are as necessary as they used to be, because the manhole covers and gullies show exactly where the pipes are; and now I note that the Master of the Rolls has lately dismissed the appeal against the decision of Mr. Justice Ridley, that the architect must give up the plans he had prepared for certain flats. Plans of buildings erected during the course of his career, together with his brains and experience, are the architect's stock-in-trade; but, unless he goes to the trouble and expense of making tracings, all his records may be swept away. I have pointed out to clients before now that if the drawings are taken away they will assuredly be lost. Time has already, on more than two occasions, proved the correctness of my statement, and the strayed ones have been restored to the fold. I must say that I think the R.I.B.A., with their splendid income, and—if I am correctly informed—substantial reserve should help the profession, or at least their own members, to fight with all its strength such legal injustice and unfairness. . . . The architect has to face competitors on every hand. The enterprising builder keeps the tracings of various works of which he may become possessed. Even if the architect is sharp enough, and insists on their being returned before the issue of the final certificate, his office-boy does the needful with pen, ink, and tracing paper, and many a clever design is repeated *ad nauseam* in a row of jerry-built houses, or put in a more pretentious building in entirely the wrong position. The auctioneer and house agent has a little field-day occasionally. . . . The engineer, too, builds a steel bridge and loads the spandrels with tons of cast-iron 'ornament,' bolted on securely to prevent the structure from rising on its pin joints or hinges, and shaking off its architectural adornments into the river below. Its balustrade panels are Gothic, so are the bases of its electric light standards, all fearfully and wonderfully designed and made. There are beautiful castings further up the steel posts, but these are not Gothic, and the lamps look down bashfully and admiringly on the bases, and wish that they had crochets on their shades. Generally speaking, the past year has been one of bad trade, and naturally people do not proceed with new works under such circumstances. Let us hope that shortly matters may improve and work found for a very deserving class, and that those who promote competitions may so draft the conditions that architects may feel that they will be treated fairly. The public and committees generally have only very crude ideas of the enormous amount of work involved in preparing the necessary drawings, and I think that the suggestion of the R.I.B.A. is most excellent—that promoters should pay a successful competitor 1½ per cent. on the estimated cost of a delayed or abandoned scheme; but one may call 'spirits from the vasty deep.' The question is, Will they come? I do not propose to give the ordinary schedule of works carried out either locally or throughout the country. You can all read that for yourselves; but I really believe the public generally are taking more interest in architects and their works, and one hears less and less every year of the coarse remark or jest that 'they keep the cost of the work up because they are paid a commission on it.' . . . We must all endeavour to see that the younger men who come in have a real love for a beautiful art and science, and are determined to be a credit to it by being well-informed in all its various ramifications; because, after all, even with registration—let me misquote—'the name is but the guinea stamp; the man's the gowd for a' that.'" Mr. Cole then proposed Mr. B. Priestly Shires as President for the ensuing year. This was seconded by Mr. Parker, and agreed to. Mr. Harbottle Reed was elected Vice-President; Mr. A. J. Pinn, Hon. Secretary; Mr. Octavius Ralling, Hon. Treasurer; and to fill vacancies on the Council, Mr. A. J. Lucas, Mr. J. Jerman, Mr. O. B. Peter were elected. The meeting was followed by luncheon at the Bedford Hotel, and a series of visits, first to the Abbey ruins, the party being shown over the Vicarage grounds by the vicar. Then an inspection of the church was made. Then followed a drive to Walreddon, an ancient manor house of the Courtenays.

ENGINEERING SOCIETIES.

THE INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting on the 11th inst. Sir Guilford Molesworth, K.C.I.E., President, in the chair, the paper read was, "The Maintenance and Strengthening of Early Iron Bridges," by Mr. W. Marriott, M.Inst.C.E. The following is an abstract of the paper:—The paper deals first with the strengthening of an iron bridge over the River Ouse, consisting of three spans of 117 ft., and two end spans of 70 ft., the reinforcements consisting of extra plates to increase the flange-area and provide extra rivets for the braces, new cross girders and flooring. The bridge was thus brought up to modern requirements at a cost of some 8,000*l*. Next is given a description of the strengthening of a bridge over the River Thurne, consisting of three spans of 79 ft. each, which necessitated extra plates at all panel-points to give extra rivet-area, new cross girders and longitudinals, and re-arrangement of flooring. The whole of this work was done while traffic was running, at a cost of about 2,050*l*. A method of reducing the stress in old bridges by reducing the permanent dead load is also dealt with, and an example is given. The author proceeds to state the difference, from a maintenance point of view, between iron and steel, and records the experience of over twenty years in the

preservation of bridges, etc., from rust; after describing various methods, he ends by recommending the use of Portland cement for the purpose, giving examples of its use.—It was announced that ten associate members had been transferred to the class of members, viz., Messrs. H. A. Cutler, S. Dunkerley, J. P. Harris, A. S. Jones, J. Lord, H. C. Marks, L. S. M. Marsh, A. S. Napier, J. W. Ransome, E. Worthington. It was also reported that six candidates had been admitted as students. The monthly ballot resulted in the election of one member, eight associate members, and one associate.

THE JUNIOR INSTITUTION OF ENGINEERS.—A large number of members of this Institution visited the Willesden Power House of the North Metropolitan Electric Power Supply Company, at Taylor's-lane, on the 6th inst. In the absence through illness of the engineer, Mr. E. T. Ruthven Murray, they were conducted round by the station superintendent, Mr. F. D. Napier, and his assistants. The vice-chairman of the Institution, Mr. Adam Hunter, at the conclusion of the visit expressed the acknowledgments of the members for all that had been arranged for their reception. The continuous current is generated directly at a pressure of from 490 to 540 volts, suitable for the 2 by 240 volt network surrounding the works, and this fixes the average pressure of the alternating current terminals of the same generator at 316 volts; the machines being, as it were, rotary converters driven by engines. Step-up transformers, with a ratio of 1-9 are employed, raising the pressure to an average of about 2,850 volts, at which it is transmitted to the sub-station. There variable-rate step-down transformers and rotary converters once more reduce the pressure down to that suitable for a 2 by 240 volt three-wire continuous-current distribution. The site of the station occupies an area of 3½ acres, and adjoins the Midland and South-Western Junction Railway, to which access can be gained to all the great northern lines. The boilers are of the Babcock Wilcox type, arranged in pairs, built in glazed brick settings. Draught gauges are fitted, and an "Ados" registering CO_2 recorder. There are Hall steam feed pumps, and a Mather & Platt electrically-driven pump, the latter having a special device for effecting its regulation. The arrangement of steam mains is novel. A jet condenser by Ashton Frost & Co. is provided for the two 300 K.W. sets, while the other sets have their own surface condensers. There is a cooling plant supplied by Korting Bros., on which are four lines of spraying jets. The surface of the pond is 30 ft. by 200 ft., and it is capable of dealing with 100,000 gallons of water per hour, which is the storage capacity of the pond. All water is softened by a Brunn-Lowener apparatus, in which milk of lime and soda is used. For the general arrangement, and for the design of many of the special details of the low tension continuous-current switchboard, Mr. Ruthven Murray was responsible. His object was to arrange a switchboard embodying the distinctive and valuable features of the Ferranti high-pressure cellular type of switch gear for low-pressure working. The principal feature of novelty in the low-tension switchboard is that four separate 'bus bars are provided, and there are "Selector Switches," which enable any machine or feeder to be connected to any 'bus bar. The battery-room contains 250 Tudor cells, with a capacity of 840 ampère hours, at a ten-hour discharge rate.

BOOKS RECEIVED.

REINFORCED CONCRETE CONSTRUCTION. Part I.: Methods of Calculation, by A. W. Buel; Part II.: Representative Structures, and Part III.: Methods of Construction, by C. S. Hill. (London: Archibald Constable & Co., Ltd. 21s. net.)

A HANDBOOK FOR SUPERINTENDENTS OF CONSTRUCTION, ARCHITECTS, BUILDERS, AND BUILDING INSPECTORS. By H. G. Richey. (New York: J. Wiley & Sons. London: Chapman & Hall, Ltd. 17s. net.)

THE MERCHANT'S CLERK. By John Pearce. 26th edition. (London: Effingham Wilson. Price 2s.)

WHISTLER EXHIBITION.—Owing to previous arrangements the Whistler Memorial Exhibition at the New Gallery, Regent-street, which has already been visited by almost 60,000 persons, must close this Saturday.

COMPETITIONS.

CONGREGATIONAL CHURCH, CROOKES, SHEFFIELD.—Plans for a new church and additional schoolroom have been prepared for the Crookes Congregational Church, Upper Springvale-road, Sheffield. The buildings are to be erected on the site at the corner of Springvale-road and Western-road. Mr. E. M. Gibbs, F.R.I.B.A., was appointed assessor for selecting the sets of plans to receive premiums of 20*l.* and 10*l.* respectively, and he has awarded the first premium to Mr. W. J. Hale, and the second premium to Mr. W. T. Campsall. The other designs selected by the assessor in order of merit were those of Mr. J. Norton, Mr. W. Boddoe Rees, Messrs. C. J. Innocent & Son, Hall & Fenton, and Mould & Porritt. The church have agreed to accept the award of the assessor, and Mr. Hale will be entrusted with the building of the new church.

PUBLIC BATHS IN KILBURN.—Willesden Urban District Council resolved on Tuesday to offer premiums of 100*l.* and 50*l.* for the first and second best designs for the erection of new public baths in South Kilburn. The services of an architectural assessor are to be obtained to assist the Council in determining which designs exhibit the greatest merit.

Correspondence.

ARCHITECTS' DRAWINGS.

SIR,—Noticing your report on the ownership of plans in the recent case of Gibbon *v.* Pease, we would like to point out to architects that, in view of this recent decision, and in the interest of their profession and the old-standing custom upon this point, that the best course to adopt would be, in the future, to have an agreement with all clients that the plans and all documents are the architects' property at the completion of the works, and to insert such a clause in the conditions of contract.

Of course, then, if a client requires plans, etc., at the completion of his work, these would be considered outside of the ordinary professional duties of an architect, and would, therefore, have to be charged for at an extra special fee. R. E. CARPENTER & SON.

Quantity and Measuring Surveyors.

MAPLE FLOORING.

SIR,—Will you kindly allow me, through your columns, to ask for a little information on maple flooring?

Having a quantity of 9-in. by 3-in. by 1½-in. maple block flooring to lay, I should like to know if any of your readers have had any trouble with this wood after it has been properly laid with well-seasoned blocks, as I have been informed by persons in the trade that maple is not reliable as a block floor.

Any information will be gratefully received by CONSTANT READER.

The Student's Column.

TYPICAL STRUCTURES IN CONCRETE-STEEL.—XV.

A FRENCH VILLA RESIDENCE.

BOURG-LA-REINE, a modern village of some 3,500 inhabitants, is a favourite summer resort about three miles along the Orleans road on the southern side of Paris. In this place is situated the villa described in our present article, and which has been built entirely of concrete-steel, under the Hennebique patents. The site of the house and garden covers an area of nearly 25 metres square, the eastern and southern sides of which are bounded by the Avenue Victor Hugo and the Avenue du Lycée-Lakanal, respectively.

The house formerly standing on this plot of land was a long narrow building, and with its outbuildings extended along the whole frontage on the last-named thoroughfare. Built of the volcanic stone known as tufa, architectural character had been neglected in its construction, as much as the comfort and health of its occupants.

The new structure, erected at the north-east angle of the site, and with the principal façade on the Avenue du Lycée-Lakanal, suffers from too much architectural character. It is one of those weird constructions from which, with all our defects, we have been spared in England, except perhaps in outdoor exhibitions and at some popular watering-places. Viewed from the street, the villa presents an appearance something like that of a pier pavilion with a promenade deck on top, and from its midst springs a water-tower, which, rising to the height of 40 metres above the road level, is suggestive of a lighthouse combined with the fighting top of a modern warship.

The illustrations given this week do not include a section of the tower, but a cross-section at the *rez-de-chaussée* will be found in Fig. 106, which is a ground-floor plan of the villa. So far as internal arrangements are concerned, however, there is no ground for criticism. The house is admirably planned—spacious corridors and balconies connect the rooms of the principal floors, terrace and roof gardens, conservatories and towers provide ample space for flowering plants, and special attention has been devoted to means of access for light and air.

The gradient of the Avenue du Lycée-Lakanal, from the corner of the Avenue Victor Hugo, is about 1 in 14, in consequence of a cutting made in the direction of Bourg-la-Reine railway station, but the level of the garden remains practically unaltered, the earth being held up by a retaining wall. This peculiar condition of the site presented some difficult problems for solution; among them being that of providing convenient means of access to the coach-house of the new building. Again, the rain-water drains, as well as those of the kitchen and other domestic offices, discharged into a well, or catch-pit, on the adjoining property. Thence the water flowed to the street gutter, which it was compelled to follow for a distance of about 350 metres, because no drains or sewers had been provided in the avenue. This state of things, as may readily be imagined, was not entirely appreciated by residents in the immediate neighbourhood.

After careful consideration, the architect was enabled to utilise the steep gradient of the Avenue du Lycée-Lakanal in the following manner. He decided that the *rez-de-chaussée*, or ground floor, of the new villa should be level with the road surface of the Avenue Victor Hugo, and that the *sous-sol*, or basement floor, 3 metres below, should correspond in level with the footpath of the Avenue du Lycée-Lakanal (see Fig. 109). This arrangement enabled him to establish at road level various rooms and domestic offices, comprising the servants' hall and bedrooms, living rooms for the gardener, a lodge or lobby for the *concierge*, a motor-car garage, cellars for wine in casks and bottles, coal and wood cellars, provision and fruit stores, a hot-water boiler-room, work-rooms, and a photographic laboratory. Further, what was of some importance to members of the family going daily to their business in Paris, it permitted the private entrance of the villa to be situated conveniently for access to the railway station. This entrance opens into a lobby communicating on one hand with the passage leading to the store-rooms and wine cellars, on the other with the room of the *concierge*, and is at the foot of the stairway lettered "*entrée*" in Fig. 106. The store-rooms and cellars are beneath the hall and children's rooms on the ground floor. They are almost entirely underground, for on the garden façades, as indicated by the section (*b*) in Fig. 107 and by Fig. 108, the level of the garden having been raised by earth excavated for the construction of the foundations and the basement. The old party wall, indicated by broken lines in section (*b*), Fig. 108, was demolished and rebuilt in stone, the position of the new wall, *nouvel mur mitoyen*, being shown in Fig. 106. The heating chamber, which contains a hot-water boiler, is placed near the base of the water-tower, and is provided with alternative means of access, one from the outside, by way of the tower staircase, and the other from the inside by a lobby at the foot of the service staircase. Thus stoking can be performed from the outside without communication with the house, or from the interior as may be most convenient for the domestic staff. The flue of the hot-water boiler may be observed close to the water-tower, in Fig. 106.

Fig. 107 contains various sections of the concrete-steel walls and foundations; (*a*) is a section through the wall of the forecourt below, the *balcon* of the *salle à manger*; (*b*) is a section through the northern wall of the wine cellar, showing bins on the inside and the old party-wall on the outside; (*c*) is a section through an inner wall separating two of the cellars; and (*d*) is a section through the wall of the *concierge's* room. With the exception of the

party-wall, the whole of the foundations, walls, and other details in the basement are of concrete-steel.

Two entrances give access to the reception rooms of the villa. The principal entrance, or that used by visitors, is reached by a carriage-way leading from the Avenue Victor Hugo through the garden and up to the *perron* outside the doorway of the *grand hall*. This apartment, with a length of 9·50 metres and a width of 8 metres, opens upon the *salon* and *salle à manger* on the right hand, and upon the *réfectoire des enfants* and the *cage d'escalier* on the left hand. The second entrance, intended for use by the family, is that previously mentioned, and gives access to the staircase rising from the Avenue du Lycée-Lakanal to a vestibule which opens into the *salle à manger* on one side, the *vestiare* on the other, and leads also to the *perron* outside the *grand hall*.

Ventilation of the entire suite of rooms on the ground floor is effected by various openings and air ducts in addition to the windows and doors. The verandah-conservatory (*serre*) of the *salon* (see Figs. 106 and 109) faces the east, and is completely separated from that room by a glazed partition with a door at either end and a large sliding sash in the middle. One end of the conservatory is connected with the open balcony outside the *salle à manger*, a current of air is established between the balcony and the north gable of the villa, which projects beyond the general façade. These structural features provide excellent means for regulating the temperature of the *salon*, to which ample light is admitted through the glazing of the conservatory.

Fig. 106 shows the position of the kitchen, which, being 5 metres in height and exposed on three sides to the outer air, can be very efficiently ventilated so as to prevent the smell of cooking from reaching the dining-room and other parts of the house. It should be mentioned that the upper part of the kitchen is separated from the dining-room by a linen store on the mezzanine floor, beneath which there are a service-room and a corridor affording communication between the kitchen and the dining-room. This passage is formed with a floor of concrete-steel extending over the entrance lobby at the foot of the private entrance in the Avenue du Lycée-Lakanal. On the western side of the hall the children's dining-room, nursery, and bath-room constitute an entirely separate suite of rooms and yet are quite easy of access. The nursery is well lighted and at the same time shielded from the direct rays of the sun by the octagonal tower and the balconies of the first story (shown in broken outline in Fig. 106). A separate stairway leads from the nursery directly into the garden. All the principal rooms on the ground floor have the uniform height of 5 metres.

With the object of preserving as far as possible the existing levels and arrangement of the garden, and to avoid the destruction of trees, it was decided to make the nursery of the form shown in Fig. 106, where one outer wall is at an angle of 45 degrees with the other two outer walls. We really cannot see that this course was at all necessary, but its adoption gave rise to a piece of construction which is of interest to students of concrete-steel design. Thus, on the first floor it was very desirable to provide a small *salon* to be used for needle-work or a boudoir, and the most convenient position was above the angle cut off from the nursery, where it is, so to say, suspended among the foliage of the trees near the house. This room occupies the lower portion of an octagonal tower, whose position is indicated by broken lines in Fig. 106. Fig. 108 gives a section of the tower, which has a weight of 180 tonnes, and projects about 8·50 metres from the wall of the nursery without taking into account the circular turret near the top. The diameter of a circle inscribed within the walls of the octagon is 4 metres, and the inner surface of the wall next to the main building is a continuation of the outer wall surface on the ground floor. Rising above the level of the terrace garden on the roof of the main building, the upper portion of the tower affords space for a kiosk, the flat roof of which is covered with a bed of earth 1 metre deep, in which fruit-trees are planted. A wide exterior balcony of concrete-steel extends round the tower and constitutes a very pleasant retreat in summer-time. Of course, a staircase was required for access to this little terrace, and, by the ingenuity of the engineer delighting in the task of overcoming a difficulty, a concrete-steel circular staircase was provided in a turret built on the exterior face of the octagonal tower and projecting beyond a door opposite to that opening from the main roof garden.

Returning to the ground story, we may point out that ample shade is provided along the western and southern façades by the balconies, galleries, and tower indicated in broken outline in Fig. 106, and, to some extent, in section by Figs. 108 and 110.

The broad projecting terrace overhanging the principal entrance shields it in a large measure from the direct rays of the sun. The concrete-steel uprights which carry the corbelling are of double-T section, as shown in plan by Fig. 106, and have a thickness of 11 centimetres, the recessed part of the uprights serving to receive the hinged window sashes and shutters, which remain open throughout the summer, thus virtually transforming the *grand hall* into an interior cour , from which the whole of the house is abundantly supplied with fresh air.

Above the two stories of which the general arrangement has been described is the first floor, occupied chiefly by bedrooms, but including also some other apartments devoted to work or recreation, while a portion of the area is laid out as a terrace garden, in communication by means of covered balconies and galleries with all the principal rooms. The flat roof of the villa is covered with earth 1 metre deep, for the formation of a second terrace garden, except in one part, which is occupied by a hot-house.

In this building, the main features of which have been outlined above, concrete-steel has been utilised from the most important members down to the smallest details of the construction. The valuable quality possessed by this material of accommodating itself to all forms of design, and at the same time of permitting the economical attainment of the necessary resistances in every direction, is here demonstrated in most characteristic fashion.

In order to obviate the necessity for covering the cement surfaces of the walls with glazed stoneware, all the exterior facings were composed of slabs, from 3 to 4 centimetres thick, moulded in advance in courses about 3·5 centimetres high, this being the most suitable height for making a good layer of concrete. These facing slabs took the place of timber moulds for depositing the inner concrete of the walls after the reinforcement had been disposed in accordance with the working drawings. The villa at Bourg-la-Reine embodies the first practical application of concrete-steel facing slabs in the manner described, but we may mention that it has since been adopted by several licensees under the Hennebique system, notably in the bridges of Soissons and Decize. The method includes a new and ingenious application of the principle of transverse reinforcement in the form of flat bands of steel, and is particularly worthy of notice because it offers a ready means of obtaining natural facings of different grain and colour without the necessity for covering the surface with paint or a veneer of coloured tiles or terra-cotta.

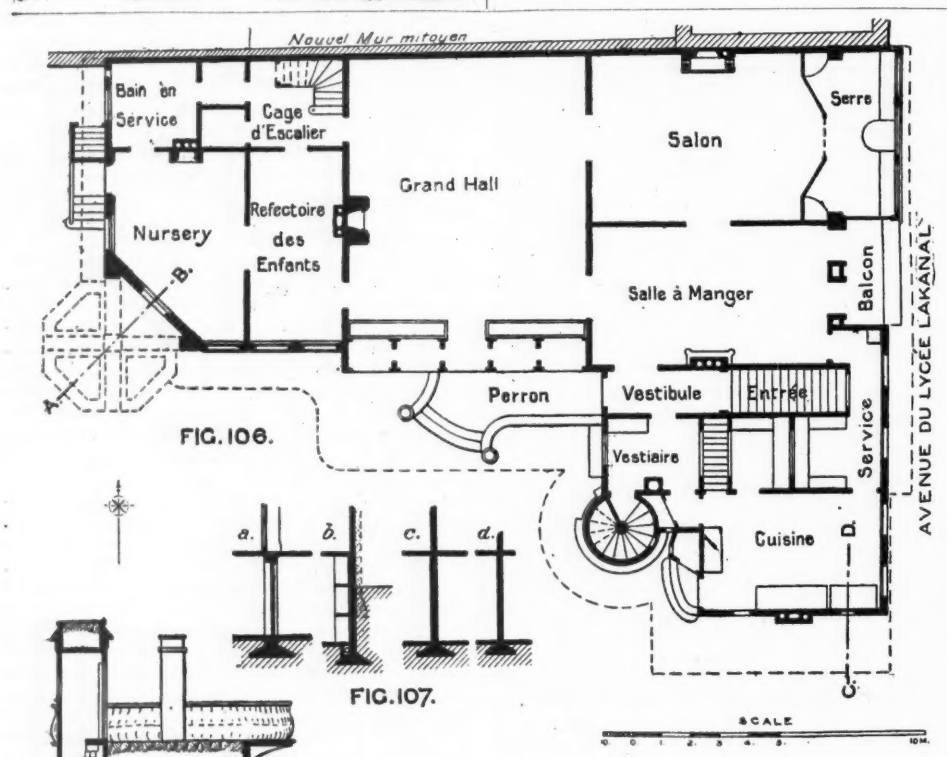


FIG. 106.

FIG. 107.

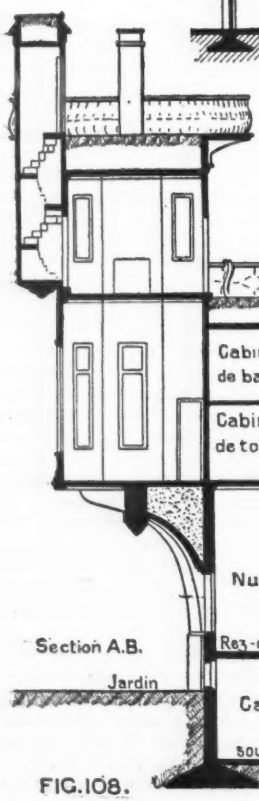


FIG. 108.

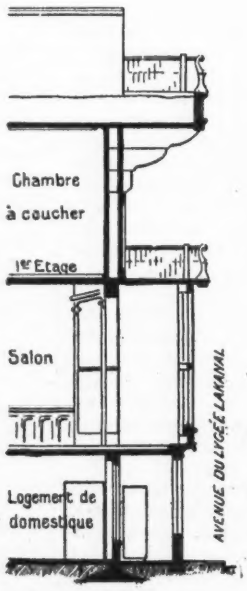


FIG. 109.

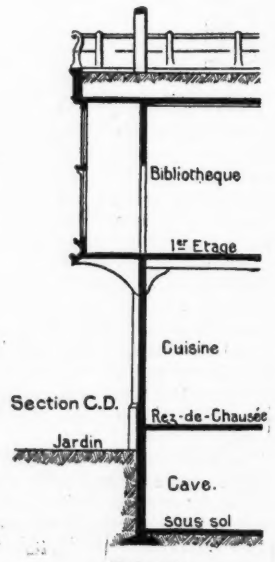


FIG. 110.

Illustrations to Student's Column.

We may here point out, as particularly evidenced in Fig. 108, the magnitude of the masses built as consoles, the great arm of leverage they present, and the small dimensions of the piers and floors which support them. Nevertheless, not the slightest sign of excessive strain is manifested in any part of the construction, no fissures or incipient cracks are to be detected in the concrete of the consoles, nor in that of the floors of the first story, nor of the flat roof of the villa. Two summers and two winters have passed since the execution of this work, during which it has been subject to the stresses due to the dead and live loads, and to expansion and contraction arising from temperature variations.

Simplicity of construction is particularly characteristic of the corbelling of the octagonal tower, which, as shown by Fig. 106, is formed by continuations of two walls of the main building, the point of intersection being identical with the central axis of the tower supported. Beyond the point where the two main elements of resistance of the corbelling intersect at right angles, the same members are continued to the points, as represented in Fig. 108.

This is an admirable example of the advantage which appertains to concrete-steel construction, making it possible to provide members for safely withstanding stress encountered under particularly trying conditions, notwithstanding the fact that the members in question are disposed so that they converge at and pass through a point at which the substance of each is penetrated by that of the other.

In steel construction, junctions of this kind would be sources of great weakness, but as previously demonstrated in Article XII., p. 328, they present no difficulty whatever to the designer who is familiar with the theory of concrete-steel, and who has learned to appreciate the wonderful facilities and possibilities it offers.

OBITUARY.

MR. FRANK CAWS.—We regret to announce the death of Mr. Frank Caws, which occurred at his residence, 1, Bellevue-crescent, Sunderland, on Saturday, last week. Mr. Caws was born at Sea View, Isle of Wight, fifty-nine years ago, and, after serving his articles at Ryde, went through a course at Kensington School of Art, where he took several prizes. Mr. Caws then received an appointment at Darlington, where he did some work for the North-Eastern Railway Company, after which he was engaged at Wolverhampton. He went to Sunderland at the age of 21, and, after being with Messrs. Potts & Sons for a while, he opened an office on his own behalf. Mr. Caws designed many structures in the town and elsewhere. A pier at Sea View and the suspension bridge across the Wear at Stanhope are also the work of the deceased gentleman, who was a Fellow of the Royal Institute of British Architects, and was twice President of the Northern Architectural Association. Mr. Caws leaves a widow and grown-up family of four daughters and one son. The funeral took place at Bishopwearmouth Cemetery, Sunderland, on Tuesday, when a large number of architects and others were present.

GENERAL BUILDING NEWS.

WAKEFIELD CATHEDRAL EXTENSION.—Easter will see the completion of the monument to the late Bishop Walsham How. The plans for the work were originally prepared by the late Mr. J. L. Pearson, R.A., and the extensions have been carried out, under the superintendence of his son, Mr. F. L. Pearson. The cathedral has been extended eastward by about 60 ft., and this addition has meant an extension of the chancel, increased length to the choir, and the provision of a retro-choir, while further eastward, and screened by the reredos, is a chapel. This is approached from the retro-choir, and is really a continuation of it. The chancel aisles have been extended eastward to the same extent as the retro-choir, and these extensions take the form of south and north transepts, with eastern aisles. The additions have resulted in a rearrangement of the cathedral fittings, more particularly in the chancel and choir. An old vestry has been converted into an organ chamber, and the organ is now undergoing renovation. The choir stalls have been extended. Canopies have been added, and the screen has been refixed. The old reredos, which screens the new chapel, is being adapted for its new place, and is being supported by a stone back. The ceiling of the chapel is a design of elaborate tracery groining. A feature in the memorial scheme is the tomb with the recumbent figure of the late Bishop Walsham How, who is represented in his episcopal robes, and this is now being placed into position. The extension buildings include three large stained-glass windows, in addition to the children's window. One is in the east, another in the north transept, and the third in the south. The natural slope of the ground on the eastern side enabled the architect to prepare plans for additional cathedral accommodation. Underneath the chapel is a chapter-house, and two vestries, one for the clergy and the other for the choir. Access to these from the interior of the cathedral is obtained by a staircase on the north side, and there is also an external entrance on the south side, which leads into a corridor that runs from north to south. The general contract for the extension has been carried out by Messrs. Armitage & Hodgson, of Leeds, and Mr. W. J. Crook has acted as clerk of the works. Mr. Forsyth, of London, has been the artist for the recumbent effigy of the late bishop. The consecration of the new portion of the cathedral will take place on Easter Tuesday morning, by the Bishop of Wakefield.

BUILDING AT MIDDLESBROUGH.—During the present municipal year, 393 sets of plans, including ten for villas, 305 for houses, and sixteen for shops, have been approved by the Middlesbrough Town Council, this number being 104 in excess of that for the same period of last year. During this time 289 houses have been certified as fit for habitation, and 293 are now in course of erection.

RESTORATION OF ALL SAINTS' CHURCH, DERBY.—Repairs are being carried out at this church by Messrs. Rudd & Sons, Ltd., contractors, of Grantham, the architect being Mr. Temple Moore, of Hampstead, London. Mr. A. Brentnall is the clerk of the works.

RESTORATION, ST. THOMAS' CHURCH, COVENTRY.—It is proposed to repair this church, and Mr. Arthur Dixon, architect, of Birmingham, has prepared a report on the work required to be done.

RESTORATION OF TIDESWELL CHURCH.—On the 6th inst. the Bishop of Southwell dedicated the restoration work which has been carried out at the west end of this church. The restoration includes the erection of oak porches, a screen, and doors. The work is Gothic in design, and has been supervised by Mr. J. Oldrid Scott, of Westminster.

COUNCIL SCHOOL, READING.—The new Joseph Henry Wilson School, which has been built in the Grovelands-road East, Reading, has just been opened. The buildings have been arranged in three principal blocks, the two larger blocks being devoted to ordinary school purposes, and the third, which is kept on the western boundary of the site, is to be used for technical instruction—viz., metal-work and cooking and laundry work. The school is arranged in four departments, and contains the following accommodation:—In the northern block on the ground floor 363 infants, on the upper floor 338 junior mixed. In the southern block on the ground floor 308 intermediate mixed, and on the upper floor 308 senior mixed. In the general arrangement of plan each department is similar, having a central hall, with classrooms on three sides. The head teacher's room is placed in the centre of the west side of the hall, and commands an oversight, not only of the various classrooms, but also of the playgrounds. There is a room for the teaching of science on the upper floor of the southern block, and a room for teaching drawing on the ground floor of the same block. Each block contains, in addition, separate cloak lobbies, and lavatories for boys and girls, rooms for assistant teachers, caretaker, stores, etc. The buildings are heated by low-pressure hot water, the boilers being placed at the northern end of the blocks in the basement, whence the heating pipes are conducted to the various rooms by special ducts, below the floors, so that the pipes are always accessible. The various apartments are fitted with ventilating radiators, and lighted by electric light. The technical block contains a school for manual instruction, metal-work, and engineering, with benches for twenty boys. This shop has forges, lathes, drilling machines, etc., in addition to a bench and vice for each boy. The machinery is driven by overhead shafting served by an electric motor. The cookery and laundry school has one large room, with raised gallery, and appliances for teaching and demonstration, while adjoining this school is a suite of rooms fitted up as a cottage for instruction in housewifery. In the playgrounds, which are asphalted throughout, are covered playing-sheds, and ranges of sanitary buildings for the various departments. Internally, the walls are brickwork, coloured in Duresco. The dadoes in the corridors and staircases are of salt-glazed bricks, while the dadoes in the classrooms are formed with Blundell Spence's liquid enamel on ordinary brickwork. The joinery is of pitch-pine, stained and varnished, and the floors of the central halls and corridors are fireproof, with wood blocks. Externally, the buildings are of local red brick, with mottled Hollington stone dressings. The general building contract has been carried out by Messrs. J. Norris & Sons, of Sunningdale; Messrs. T. C. Williams & Sons have executed the heating and ventilation; Messrs. Baughan & Son the electrical work for lighting throughout and machinery; Messrs. Mackies, Ltd., the machinery in the metal-work and engineering school; and Messrs. Taylor & Gillard are supplying the portable tools. The architects are Messrs. Charles Smith & Son, of Reading; and the clerk of the works Mr. C. H. Lanfear.

COUNCIL SCHOOL, CHATHAM.—The foundation-stone has just been laid of a new Council school which is being erected in Glencoe-road, Chatham. The building will accommodate 900 children—300 boys, 300 girls, and 300 infants. The cost is estimated at 13,540*l.* The work is being carried out by Mr. H. E. Phillips, with Mr. T. Cramp as clerk of works, and the architect is Mr. H. H. Dunstall. One block of the buildings will be for boys and girls, the boys being on the ground floor and the girls above, while a cookery school is to be provided in the basement. There will be a central hall, surrounded by six classrooms. The same principle is to be adopted in the other block, with ground floor only, for the infants. The corridors are to be lined with glazed bricks, and the staircases will be made of concrete.

BATHS, SELLY OAK.—On the 27th ult. Councillor William Holmes (Chairman of the Baths, Parks, and Cemeteries Committee of the King's Norton and Northfield Urban District Council), laid the foundation-stone of the new baths which the Council have decided to erect upon a site in Tiverton-road, Selly Oak. There will be swimming baths for men, 75 ft. by 30 ft.; for women, 24 ft. by 26 ft.; spectators' galleries will be provided, and it is proposed also when, in winter, the large men's swiming bath is not required, to lay boards over it so as to make provision for the holding of public meetings. The architect is Mr. Harding Payne.

EXTENSION OF INFIRMARY, OLDHAM.—The new extensions to the Oldham Infirmary, which commemorate the reign of the late Queen Victoria, were opened recently. Built and furnished at a cost of upwards of 20,000*l.*, the extension provides beds for forty-three patients, seven servants, and one attendant, making a total of fifty-one beds. The accident, dressing, and waiting rooms have a separate entrance, which is screened from the public view. The main public entrance is centrally placed in Union-street West, and leads to a central hall. The two new operating theatres will serve the purposes of both the old and the new premises in future, enabling the governors to utilise the two former operating theatres in the original building as small wards, thereby increasing the number of beds available for patients. The sanitary arrangements for the new extensions are in a separate block. The walls of the wards have an opalite dado, and are finished above in cement plaster and special lacquer. The walls of the operating theatres, lavatories, and basement are finished with opalite tiling from floor to ceiling. The floors are all of concrete, finished either with teak wood blocks or marble mosaic. The hoist is worked by electricity, and is of sufficient capacity to receive a patient's bed and two attendants. A complete installation of telephones for the whole of the institution has been provided. The lighting is by electricity. Mr. T. Taylor was the architect of the extensions, and the contractors who have carried out the work were:—Messrs. Ogden Brothers, excavating, brickwork, and concreting; Mr. Samuel Smethurst, masonry; Mr. William Lees, carpenter and joiner's work; Mr. James Hall, plastering; Mr. Joseph Jackson, slating; Messrs. S. Ashton & Sons, external plumbing and glazing; Mr. William Collier, internal plumbing, etc.; Mr. William Hand, decorating; Messrs. Keith, Blackman, & Co., heating and ventilating; Messrs. Drake & Gorham, electric work; Messrs. Lancashire and Cheshire Opalite and Tile Company, opalite tiling; Messrs. Doulton & Co., general tiling and sanitary fittings; Messrs. Rusts, Vitreous Glass Mosaic Company, mosaic flooring; Messrs. C. Schofield & Co., general fitting; Mr. William Lees, general fittings; Messrs. G. Walker & Co., wood-block flooring.

NEW WORKHOUSE, TETBURY.—The Tetbury Board of Guardians have accepted the tender of Mr. George Drew for the rebuilding of the workhouse. The amount was 3,850*l.*, less 150*l.* for old material. Mr. Lawson, the architect, was instructed to negotiate separate contracts for the supply of the heating, laundry, and cooking appliances for the new house.

QUEEN'S JUBILEE HOSPITAL, EARL'S COURT.—At the recent annual meeting of the governors of the Queen's Jubilee Hospital, Richmond-road, Earl's Court, the chairman of the Board of Management announced that they had requested the architect, Mr. Blackford, to submit an estimate showing what portion of the proposed extension of the hospital buildings could be constructed for 2,500*l.*, and that Mr. Blackford advised it would, in his opinion, be better to erect one floor upon the remaining part of the site. The work has been proceeded with, so far as the resources of the hospital allow, and the new building will form the out-patients' department of an extension which it is hoped will be ultimately completed.

CONGREGATIONAL CHAPEL, WEST HAM.—The East-road Congregational Chapel, West Ham, has been recently purchased by the Committee of the Royal Association in Aid of the Deaf and Dumb, of No. 419, Oxford-street, W., who are about to restore the fabric and re-arrange the building for the purposes of a church and institute after designs by Sir Arthur Blomfield & Sons.

FLATS, WESTMINSTER, S.W.—The contract for the erection of Cathedral Mansions, to occupy the sites of Nos. 258-266, Vauxhall Bridge-road, Victoria, S.W., has been signed between Mr. Tod Heatly, D'Eresby House, Ltd., and Mr. C. Gray, contractor, of Kensington and Shepherd's Bush, and the work is to be commenced at once. There will be a roof garden for use of tenants. The elevation will be carried out in cherry-red bricks, gauged work, and dressings of terra-cotta by Dennis, of Ruabon. Messrs. Palgrave & Co., Westminster, are the architects. Mr. Farrell is the clerk of works.

APPOINTMENTS

BERMONDSEY.—At a recent meeting of the Bermondsey Borough Council Mr. W. E. G. Heenan, M.Inst.E.E., was appointed, out of sixteen candidates, Electrical Engineer to the Council.

LEEDS.—It is expected that next week the Sewerage Committee of the Leeds Corporation will come to a definite decision respecting the appointment of an engineer for carrying out the new works that are in contemplation. Three candidates are still in the running—viz., Mr. Alfred Fidler, Borough Engineer, Northampton; Mr. Joseph Garfield, Sewerage Engineer to the Bradford Corporation; and Mr. George Adam Hart, Chief Assistant-Engineer to the Birmingham, Tame, and Rea Drainage Board.—The Improvements Committee of the Leeds Corporation considered, on the 10th inst., the question of appointing a city engineer in succession to Mr. Thomas Hewson. Having regard to the duties being narrowed by the decision to appoint waterworks and sewerage engineers as separate offices, it was thought advisable to refer the matter to a sub-committee, who will inquire into the work to be transacted by such an official, and report.—*Yorkshire Post.*

SANITARY AND ENGINEERING NEWS.

SEWAGE WORKS, SKIPTON.—The pressure brought to bear on the Skipton Urban Council by the West Riding Rivers Board has borne fruit in a supplementary scheme of sewage treatment, details of which were submitted to the Council on the 6th inst by their engineer, Mr. John Mallinson. The estimated cost of the new works is 12,500*l.*, and the Council authorised compliance with the usual formalities.—*Yorkshire Post.*

SCARBOROUGH MARINE DRIVE.—Much concern is felt in Scarborough, it is stated, at the precarious condition of the Marine Drive sea-wall, enclosing the new promenade round the base of the Castle Hill. Mr. James Walker (Engineer to the Tyne Commissioners), who had been retained to give expert advice as to the damage wrought by the high tide and gale of January 7, recommends remedial works with the utmost possible expedition, as, owing to the blows of the sea, the pressure of water at the back, and the absence of support at the toe, the structure has been so severely shaken that it is in the first stage of disintegration. Unless it is strengthened in a thoroughly satisfactory manner, another severe storm may cause a breach. The damaged portion, Mr. Walker points out, is, roughly, 540 yds. in extent, and he suggests the construction against the front of this section of three concrete-in-mass buttresses, at an estimated cost of 8,000*l.*

WATER SUPPLY, RYDE.—On the 1st inst. an inquiry was held at the Ryde Town Hall by Mr. F. H. Tulloch, Inspector to the Local Government Board, respecting an application by the Corporation to borrow 7,400*l.* for the purposes of water supply, including the construction of works at Knighton and Ashey. The Town Clerk (Mr. C. G. Vincent) stated that the loan was in respect to a scheme for protecting the present water supply, and the Borough Surveyor (Mr. C. Mathew) explained the plans showing the land to be acquired and the proposed work to be carried out. The inquiry then closed

LEVEL CROSSINGS AT GRIMSBY.—The Grimsby Corporation Highways Committee discussed, on the 3rd inst., plans submitted by the Borough Surveyor (Mr. H. Gilbert Wyatt) for the construction of a subway at the Cleethorpes-road level crossing, at an estimated cost of 4,150*l.* Exception was taken to the plans because they only provided for pedestrians, and not for vehicular traffic. The Committee finally decided that a vehicular subway would be too expensive at present, and accepted the scheme for recommendation to the Council.

MISCELLANEOUS.

GOOD FRIDAY WEEK.—In consequence of the Easter Holidays, next week we go to press a day earlier than usual. All communications for the Editor must reach him by *first post on Wednesday morning*, except lists of tenders, which will be received up to 10 a.m. of the same day.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. Sydney J. Tatchell has transferred his office to 13, Queen Anne's-gate, Westminster, S.W.

HOUSING PROBLEM, WOOLWICH.—A Local Government Board inquiry was opened on Tuesday, last week, at Woolwich Town Hall, by Major C. E. Norton, C.E., with whom was Mr. F. J. Willis, into an application by the Woolwich Borough Council for a provisional order to empower that body to put in force, with reference to certain lands required for erecting lodging-houses for the working classes, and situated on the south side of and adjoining Bostal-hill, Plumstead, the powers of the Land Clauses Acts with respect to the purchase and taking of lands otherwise than by agreement. The scheme was opposed. The Town Clerk of Woolwich (Mr. A. B. Bryceson), in stating the case for the Council, said that the estimated population of the borough was 132,070, and the assessable value 722,940*l.* The Borough Council adopted Part III. of the Housing of the Working Classes Act, under which the present application was made, and it was the duty of the Council to provide proper accommodation at a reasonable price, and not to regard such a scheme as a speculation. There was considerable over-crowding in the borough; rents had risen, and, on the decrease of work in the Royal Arsenal after the war, many people had left their houses for apartments. The houses which were empty or in the course of construction, were not suitable for the working classes. The congestion compelled many workmen employed in the borough to live outside. The proposed site was pleasantly situated, and would, when the London County Council's tramway schemes were completed, be easily accessible from Woolwich, though a mile and a half from the Arsenal. Mr. W. R. Ross, Chairman of the Housing Committee of the Borough Council, gave evidence, and said it was proposed to erect a few houses to let at 5s. a week, more at 6s. to 10s. a week, and a few superior ones at 11s. a week. He was cross-examined as to the failure of a similar scheme at North Woolwich, which he ascribed to its inaccessibility. Dr. Sidney Davies, Medical Officer of Health, also gave evidence, and the inquiry was adjourned.

NEW IMPERIAL BUILDINGS.—In the House of Commons, a few days ago, Lord Balcarres informed Mr. Coghill that the contract for the building of the Victoria and Albert Museum is to be finished in February, 1907. It was impossible to hasten the completion. The foundation-stone was laid, by her late Majesty's desire, at a date considerably earlier than the works could be begun; hence much apparent delay. As regards the Royal College of Science in Imperial Institute-road, the building cannot be ready for occupation before the spring of next year. None of the temporary sheds can be vacated until then at the earliest.

AMERICAN INDUSTRY.—The Friday evening lecture at the Royal Institution on the 7th inst. was delivered by Mr. Alfred Mosely, C.M.G., whose subject was "American Industry." Sir James Crichton Browne was in the chair. Mr. Mosely said his subject was the visit paid by representatives of British trade unions to the United States under his auspices two years ago. He had arranged this visit with the hope of bringing home to our workpeople the enormous industrial progress made by the United States of recent years. Many things had contributed to this development, but, in his opinion, education had had more to do with it than any other single factor. Something, he thought, was radically wrong with our system of education, and although we had spent huge sums of money on it we had not got commensurate results. We, and especially our workmen, must realise that the old *régime* had gone, and we must change to meet changed conditions. This, too, was the case in regard to tariffs. However good our policy might have been in the past, we must reconsider our position; and even so there would be no finality, for any alteration we made now might have to be altered again twenty years hence. Mr. Mosely pointed out how close together the masters and the men were in America; the willingness of employers to listen to and pay for ideas originated by their men provided a brain-force that was ever working to improve the methods of manufacture. Moreover, piecework was the order of the day, and the man could rely on the prices not being "cut," the employer seeing that the more his men could turn out the better it was for himself, since the burden of the fixed charges of his business was distributed over a large area.

PROTECTION OF ANCIENT BUILDINGS.—The following memorial has been presented to the Benchers of Gray's Inn by the Society for the Protection of Ancient Buildings:—"We, the undersigned, have learnt with deep regret that the Benchers of Gray's Inn have decided to demolish No. 15, Gray's Inn-square, and we therefore earnestly and humbly beg that the Benchers will spare the building, on the grounds of its exceptional beauty, and the charm which it lends to Field-court, which, with the beautiful wrought-iron gates and other pleasant surroundings, is one of the most picturesque spots in London." About 150 names are appended to the memorial.

MEMORIAL TO DEAN HOLE, ROCHESTER.—The executive committee of the Dean Hole Memorial Fund have commissioned Mr. F. W. Pomeroy to execute in marble a recumbent effigy of the late Dean of Rochester, and, in conjunction with Mr. C. Hodgson Fowler, Architect to the Dean and Chapter of Rochester, to prepare a design for an altar tomb or base for the figure, to be placed in the cathedral.

BUILDING CLASSES AT LEEDS INSTITUTE.—Several developments in connexion with the Technical School of this Institute will come into operation next session, among which will be a new building department, which will offer courses of study covering four sessions each, with the following sub-divisions:—Professional side—(1) architects, (2) surveyors, (3) builders' clerks, (4) estate and insurance agents. Artisan side—(1) bricklayers, (2) masons, (3) carpenters and joiners, (4) plumbers. Mr. James Neill, the teacher of building construction at the institute, has been appointed head of this department. It is intended to hold a special class in land surveying and levelling during the summer months.

THE VENTILATION OF SEWERS.—On Monday the Works and Highways Committee of Lewisham Borough Council circulated the following report:—"On November 2 last this Committee submitted to the Borough Council a report from the Borough Surveyor recommending the repeal of the drainage by-law, made by the London County Council on October 30, 1900, under the provisions of section 202 of the Metropolis Management Act, 1855. This by-law requires that an intercepting trap shall be fixed in every main drain or other drain immediately communicating with any sewer at a point as distant from the building and as near to the sewer as may be practicable. The Council approved the Borough Surveyor's report, and directed that a copy be forwarded to each of the metropolitan borough councils, with a request to them to state whether they would be willing to co-operate with this Council in requesting the London County Council to take the necessary steps to repeal the by-law. Replies have now been received from the borough councils as follows:—Bethnal Green, Camberwell, Deptford, Finsbury, Hammersmith, and Woolwich express their willingness to co-operate with this Council; Battersea, Holborn, Lambeth, Poplar, St. Marylebone, and Stepney will not co-operate; Bermondsey, Fulham, Hampstead, Paddington, St. Pancras, Southwark, and Wandsworth have not taken any action; Hackney and Kensington are of opinion that a conference should be convened to consider the question. Chelsea, Greenwich, Islington, Shoreditch, and Stoke Newington have not replied up to the present time. The Committee have directed that a copy of the Borough Surveyor's report be forwarded to the London County Council with a request that they will at once take the necessary steps to repeal the by-law, and that the borough councils who have expressed their willingness to co-operate be asked to communicate with the London County Council in support."

IMPROVEMENTS, HEREFORD.—Mr. W. O. E. Meade-King, Local Government Board Inspector, recently held an inquiry at the

Hereford Town Hall, to inquire into the application of the Hereford Town Council for power to borrow 3,000*l.* to defray expenditure in excess of the moneys already authorised to be borrowed for the provision of municipal buildings. Amongst those present were Messrs. J. Parker (surveyor), and H. A. Cheers (architect). Evidence was given to the effect that the sum now asked for was made up of small items to a large extent, but there were two rather heavy ones amounting to 1,611*l.* 13s. 5d., which were caused by finding that the ground of the site of the new building was faulty. At the rear of the site was discovered an old moat, supposed to be the earliest blockade of the city. In consequence of this the foundation had to be taken down, approximately, 20 ft. lower than was originally provided for. This was at the rear of the building. In the front was some old cellarage, which it was originally intended to cover over, but, the ground having been found faulty behind, it was thought best to utilise the space as a basement, and the walls were accordingly carried out.

THE INTERNATIONAL SOCIETY OF SCULPTORS, PAINTERS, AND GRAVERS.—The International Society of Sculptors, Painters, and Gravers, having been invited by the Manchester authorities to transfer their late exhibition to the City Art Gallery, have done so, and the exhibition has just been formally opened by the Lord Mayor. The Society has also received and accepted invitations from Burnley and Bradford, to which places the exhibition will be transferred at the close of the Manchester show.

CAPITAL AND LABOUR.

THE BUILDING TRADE, SUNDERLAND.—The bricklayers, masons, and plasterers of Sunderland have received from the masters notices of a reduction of a penny per hour in the wages and of certain alterations in the working hours and conditions. At present the hours vary from fifty per week in summer to forty-one and a half in winter. The men on Wearside state that they are determined to resist the notices, which will expire on May 26. The employers give bad trade as the reason of their action. The number of union men who will be affected at Sunderland is about 540. Similar notices have been given in the building trade on the Tyne and other districts. The employers are federated over the whole of the north-east district, but the men are guided by their separate local societies.

ABERDEEN PAINTERS' STRIKE.—The dispute in the painting trade at Aberdeen has been settled, and Mr. J. B. Davidson has, on behalf of the Masters' Association, furnished the following official statement as to the settlement. The position now is:—The men have given up their claim for an extra ½d. per hour; they have departed from the demand for an extra 1s. for country money, and they have agreed that the radius should be one and a half miles as formerly. They have also given way on the question of time and half from 5 p.m. to 6 a.m., while the employers have departed from the alterations they desired in the same rule. The parties have agreed to refer to the Conciliation Board the question of the date of the expiry of the by-laws as between January 31 (which the masters have declared their willingness to accept), and February 28, as at present. The rule as to the employment of labourers will now read:—"Labourers shall not be employed by any employer in either doing painting, systematic glazing, or preparing work. It is understood that labourers shall not be prevented from handling or carrying glass, where expert labour is not necessary." The parties have also agreed that, in future, a conference shall be held before the expiry of the by-laws for the purpose of coming to an amicable settlement of any differences, of which notice may have been given. Although the dispute has been settled, there is still a point to be considered in reference to the working together of union and non-union men.

GLASGOW JOINERS' WAGES.—As the result of a proposal by employers to reduce the wages of house joiners in Glasgow by 1d. per hour, and to make certain alterations as to hours of work and other matters, the men have, it is stated, practically intimated their intention to strike work.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

6,631 of 1904.—S. MCFARLANE: *Manufacture of Tiles.*

This invention relates to a process for the manufacture by hand, in various colours and designs, of glazed semi-marble tiles suitable for use in floors, pavements, walls, and for other like building or decorative purposes. According to the said invention, white Portland cement is employed in combination with various kinds of spar obtained from the numerous lead mines at home and abroad. The ingredient substances are finely-ground sand, whilst in a plastic state are thoroughly intermixed and incorporated in proportions suitable for the production of the desired colour effect. The plastic mixture then undergoes the moulding and consolidating process, whereby the surface of the tile in its finished state is adapted to resist heavy weights or strains, and to prevent, therefore, the production of any damaging or deteriorating effect in the glaze or colour of the tile. The glaze is produced by the use of an iron plough or hand bar, followed by the use of a specially-prepared bar or plough having a polished face.

10,531 of 1904.—J. O. BUCHANAN: *Automatic Sash-locking Apparatus.*

An automatic sash-locking apparatus, consisting in the combination of a case or frame secured to one sash, a carriage sliding in said case, with means for returning the carriage to its normal position, a locking bolt carried by, but capable of moving independently of, and in a direction different from, said carriage, with means for returning the locking bolt to its normal position, a "keeper" secured to the other sash or equivalent, and a recess formed in said "keeper" to receive the locking bolt.

10,866 of 1904.—W. LEOPARD: *Fastenings for Windows, and the like.*

A method of fastening windows, and the like, consisting in the combination of a slotted tongue, provided with an adjustable screw to increase the leverage thereof, a bracket in which the said tongue is hinged and bears against a spring-plate mounted therein, operating in conjunction with a pivotally-mounted locking arm, provided with a nose portion, or a turn button with a curved edge.

10,873 of 1904.—DR. A. VOELKER: *Heating by Electricity.*

This invention consists in a method of manufacturing an electric incandescent body by reducing carbonaceous material to particles or grains, of from 1 to 7 millimeters in diameter, and then dividing the material into main groups, of which the first consists, for example, only of grains of 1 millimeter diameter, the second of grains of 2 millimeters diameter, and so on, each of these groups, for the purpose of obtaining a highly-graduated series of subgroups, being varied by the addition of substances which increase or diminish the conductability of the group.

10,975 of 1904.—J. COOPER: *Ball or Float, and Similar Valves.*

This invention relates to ball or float, and similar valves, and particularly to those used in connexion with water-closet cisterns, and has for its object to provide means for preventing sticking or fouling of the valve by fur or particles of solder, lead, or other foreign matter which may, during fitting, repairing, or otherwise, get into the service pipes. According to this invention the opening or passage from the supply pipe to the valve is reduced or constricted and adapted to constitute a trap, and the valve is made of less diameter than its surrounding casing, and slides therein on a number (preferably three) of projecting bearing surfaces. According to a modification, the outlet end of the supply pipe is closed by a diaphragm, having a reduced outlet or passage leading to the valve which is seated against the outer end thereof and the inner end of the reduced outlet is extended back into the supply pipe or otherwise formed to constitute a trap.

17,634 of 1904.—T. H. NEALE: *Window-fastening Device for Sash Windows.*

A window-fastening device for sash windows, consisting essentially in pivoting a swivelling catch fastener upon the meeting rail of the lower sash, the said fastener taking into holes in a rack secured to the upper sash, the catch carrying and operating bolts extending to and entering recesses in the pulley styles, a locking screw passing through the meeting rail on the lower sash and abutting against the rack on the upper sash, with or without a padlock for securing the tail of the catch to the locking screw.

25,120 of 1904.—C. M. WHITE (J. A. Wilkinson): *Construction of Furniture.*

This consists in the construction of furniture by means of screws or bolts, and consists in the employment of spring-pressure plates which are brought into close contact with or compressed upon the wood, when the screws are screwed down, said plates thereby exercising a powerful tension or pressure on the connected parts, with the result that said parts remain in a lasting and close contact even when the joint has been loosened in consequence of the shrinking of the wood or of some other alteration in the shape of the wooden parts.

25,121 of 1904.—C. M. WHITE (J. A. Wilkinson): *Chairs and Similar Articles of Furniture.*

Chairs and like articles of furniture arranged to be swung sideways and provided with folding seats and with only two legs carrying the chair back and the seat, the said chairs being characterised by the fact that one of the legs is inserted rotatably in a socket secured to the floor so that the chair or other piece of furniture can turn on this leg and be swung sideways out of its position of use.

25,122 of 1904.—C. M. WHITE (J. A. Wilkinson): *Manufacture of Solid Bent Wooden Parts.*

A method for the production of solid bent wooden parts, characterised by the fact that the wooden parts which are to be bent are provided either on their whole length or only at the bending places with a covering or sheathing, consisting of a metallic tube tightly fitting the cross-sectional shape of the wooden parts whereupon they are submitted together with these metallic coverings to the bending operations.

25,123 of 1904.—C. M. WHITE (J. A. Wilkinson): *Barbers' Chairs, and like Articles of Furniture.*

An adjustable tilting chair intended to be used as barbers' chair, or for dental or surgical purposes, and the like, characterised by the fact that the back of the same is rigidly connected with a feet-restboard, and, together with the same can be swung round a pintle-joint secured to the seat frame which holds the immovable seat so that the chair back is tilted rearward, the feet-restboard is simultaneously swung upward and *vice versâ*.

1,144 of 1905.—H. JOHNS: *Gates.*

This invention relates to gates, and has for its object to strengthen the top bar. The advantage of this invention is that, while the upper or top bar is made the same thickness as the under bars, one is enabled to simplify the method of bracing or making the gates, by bolting on each side the various wood slats or braces instead of mortising the ends into the uprights. By the invention the otherwise weak top bar is strengthened by means of flanged metal pieces.

7,392 of 1904.—G. H. DUNLOP: *Method and Machinery for Excavating and Conveying Earth and other Materials.*

The method for excavating earth and other materials, consisting in hauling a scoop by a draft line from a tractor and controlling it from the tractor by means of double flexible controlling lines, together with a strut and operating mechanism by which double flexible controlling lines strut and operating mechanism the scoop can be tilted forward and backward and be held tilted as may be necessary whereby earth and other material can be filled into the scoop conveyed in it and dumped from it.

27,198 of 1904.—J. Y. JOHNSON (The Simplex Concrete Piling Company): *Construction of Concrete Piles and in Preparatory Piles to be Used Therefor.*

A method of forming concrete piles, the said mode consisting in the combination of a hollow preparatory pile with valve members normally closing its lower end, driving the said pile into the ground, then withdrawing the same with its valve members, and, as it is being withdrawn, introducing concrete through it into the opening which it has formed, the said concrete escaping between the open valve members at the bottom of the pile.

27,300 of 1904.—F. WISSMANN: *Sieves or Screens.*

A flat sieve for separating granulous material, ores, and the like, consisting in the combination of a perforated table held in a frame composed of longitudinal bars fixed below said table with longitudinal elastic bars fixed to said cross-stays, and having their ends freely projecting beyond the first and last cross-stay, and steel shoes at the upper ends of said bars.

27,883 of 1904.—S. W. TRAYLOR: *Rotary Screens for Minerals and other Substances.*

A screening apparatus of the class in which a concave screen rotates about a vertical axis and the material under centrifugal force moves from the centre to discharge the oversize over the outer edge characterised by the fact that the said screen is vibrated vertically and only its upward movement is arrested by impact whereby the material will be projected upwardly from the screen surface and moved towards the periphery in a series of bounds, thus enabling the meshes to free from clogging and undue abrasion.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

April 3.—By R. STAFFORD CHARLES.

Holloway.—Stock Orchard-st., l.g.r. 19*l.* 10s., u.t. 37 yrs., g.r. 4*l.* £315

By DUNN, SOMAN, & COVERDALE.

Waltham Cross.—Eleanor-rd., f., w.r. 22*l.* 2s. 195

By WILLIAM HOUGHTON.

Walthamstow.—181, Wood-st. (s.), with timber yard, etc., in rear, f., p..... 710

By MULLETT, BOOKER, & CO.

Hyde Park.—2, Chester-pl., u.t. 28½ yrs., g.r. 30*l.*, p. 1,700

Cambridge-ter., etc., l.g.r. 30*l.*, u.t. 27½ yrs., g.r. 15*l.*..... 230

Paddington.—Formosa-st., l.g.r. 30*l.*, u.t. 57½ yrs., g.r. 2*l.* 510

St. John's Wood.—Finchley-rd., l.g.r. 30*l.*, u.t. 32½ yrs., g.r. 1*l.* 6s. 10d. 500

Marylebone.—Balcombe-st., l.g.r. 24*l.*, u.t. 15½ yrs., g.r. nil 210

By A. B. RICHARDSON.

Cannonbury.—St. Paul's-rd., l.g.r. 45*l.* 5s., u.t. 21 yrs., g.r. 10*l.* (with reversion) 420

By PROTHEROE & MORRIS (at Stratford).

Forest Gate.—54 and 56, Kitchener-rd., f., w.r. 57*l.* 4s. 500

Stratford.—124 and 125, Forest-la., f., y.r. 52*l.* 680

Martin-st., l.g. rents 20*l.* 10s., reversion in 54 yrs. 515

Western-st., l.g. rents 16*l.*, reversion in 51½ yrs..... 398

Leytonstone.—78, Cann Hall-rd. (s.), u.t. 80 yrs., g.r. 4*l.*, w.r. 32*l.* 10s..... 265

6 and 7, Connaught-rd., u.t. 91½ yrs., g.r. 8*l.* 8s., w.r. 62*l.* 8s..... 460

April 4.—By DEBENHAM, TEWSON, & CO.

Old Ford.—251 to 259 (odd), Old Ford-rd. (s.), area 7,650 ft., f., w.r. 150*l.* 16s..... 1,840

64, 66, 68, and 70, Ford-st., f., w.r. 91*l.*..... 780

By HY. HOLMES & CO.

Marylebone.—17, Buckingham-st., u.t. 6½ yrs., g.r. 36*l.*, w.r. 133*l.* 18s. 400

41, Bolsover-st., u.t. 10½ yrs., g.r. 36*l.*, y.r. 100*l.* 350

By MATTHEWS, MATTHEWS, & GOODMAN (at York).

Gillamoore, Yorks.—"Faddell Rigg Farm," 120 a. 2 r. 21 p., f. and c., p. 1,200

April 5.—By GEORGE BRINSLEY & SON.

Eastcote, Middlesex. — Catlin's-la., an enclosure of freehold meadow land, 4 a. 2 r. 37 p. 455

By CARTWRIGHT & ETCHES.

Balham.—Balham-gr., l.g. rents 20*l.*, reversion in 74½ yrs. 490

75, Louisville-rd., u.t. 85½ yrs., g.r. 6*l.* 10s., y.r. 42*l.*..... 420

By FOSTER & CRANFIELD.

Kensington. — Brompton-sq., f.g. rents 20*l.*, reversion in 8 yrs. 3,550

By HORNBLOWER & FLOWER.

Sutton, Surrey.—Thicket-rd., a plot of freehold land 500

By HUNTER & HUNTER.

Stoke Newington.—20 and 20A, Newington-green (building site), area 5,000 ft., f..... 620

By THURGOOD & CO.

Catford.—18, Hawstead-rd., u.t. 76 yrs., g.r. 5*l.*, y.r. 24*l.* 240

Battersea.—71, Plough-rd. (s), f., e.r. 45*l.*..... 380

April 6.—By BISLEY & SONS.

Bermondsey.—35, 37, and 39, Alexis-st., u.t. 30 yrs., g.r. 13*l.*, w.r. 91*l.*..... 650

123 to 133 (odd), St. James'-rd., u.t. 28½ yrs., g.r. 21*l.*, w.r. 210*l.*..... 1,255

1 to 11, Willow-st., u.t. 17½ yrs., g.r. 22*l.*, w.r. 364*l.* 1,170

Peckham.—45, Evelina-rd., u.t. 61 yrs., g.r. 5*l.*, w.r. 39*l.*..... 220

Rotherhithe —4, Moodkee-st., u.t. 58 yrs., g.r. 5*l.*, w.r. 36*l.* 8s. 360

By W. A. HEAD.

Deptford.—54, Wellington-st. (s.), f., e.r. 28*l.* 390

Brockley.—3, Zetland-villas, f., y.r. 34*l.*..... 390

Norwood.—79, 81, and 83, Cobden-rd., f., w.r. 78*l.*..... 730

By CECIL HOBDAY.

Putney.—33, Carlton-rd., u.t. 59½ yrs., g.r., etc., 20*l.* 4s., p. 1,450

By WILLIAM STEVENS.

Battersea.—68, 70, 76 to 82 (even), Home-rd., u.t. 72 yrs., g.r. 26*l.*, w.r. 176*l.* 16s. 1,330

45 to 51, 59 to 67 (odd), Home-rd., u.t. 72 yrs., g.r. 44*l.*, w.r. 260*l.*..... 1,935

18, Castle-st., u.t. 72 yrs., g.r. 5*l.*, w.r. 31*l.* 4s. 220

30 and 32, Goulden-st., u.t. 72 yrs., g.r. 10*l.*, w.r. 59*l.* 16s..... 435

Wandsworth.—36 to 42 (even), 58 and 60, Ferrier-st., u.t. 72 yrs., g.r. 22*l.*, w.r. 171*l.* 12s. 1,130

Fulham.—2 to 8 (even), Bayley's-la., u.t. 79½ yrs., g.r. 16*l.* 8s., w.r. 145*l.* 12s. 1,000

Peckham.—1 to 5, Hawkin-villas, u.t. 84 yrs., g.r. 30*l.*, w.r. 169*l.* 800

Battersea.—16, Sleaford-st. (s.), u.t. 69½ yrs., g.r. 10*l.*, increasing to 12*l.*, y.r. 58*l.* 420

5, 7, and 9, Brougham-st., u.t. 54½ yrs., g.r. 6*l.*, w.r. 86*l.* 16s. 500

Stoke Newington.—42, Mildmay-gr., u.t. 46½ yrs., g.r. 6*l.* 10s., w.r. 91*l.*..... 580

Haggerston. — Whiston-st., etc., f.g.r. 12*l.*, reversion in 21 yrs. 570

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h for beerhouse; p.h. for public-house; o. for office; s. for shops; ct. for court.

MEETINGS.

FRIDAY, APRIL 14.

Royal Institution.—Right Hon. Lord Rayleigh on "The Law of Pressure of Gases below Atmosphere." 9 p.m.

Institution of Mechanical Engineers.—(1) The President, Mr. E. P. Martin, will deliver an address. (2) The Discussion will be concluded on the Steam-engine Research Report, and Professor Capper will reply. 8 p.m.

SATURDAY, APRIL 15.

Royal Institution.—Right Hon. Lord Rayleigh on "Some Controverted Questions of Optics," III. 3 p.m.

Architectural Association.—Seventh Spring Visit, to the Hammersmith Free Library, near Town Hall, by permission of Mr. H. T. Hare, the architect.

Royal Sanitary Institute (Arts Theatre, University of Liverpool).—Discussion on "Recent Methods of Rehousing Tenants Dispossessed from Insanitary Property." To be opened by Mr. F. T. Turton, Deputy Surveyor, Liverpool Corporation. 11 a.m.

MONDAY, APRIL 17.

Royal Institute of British Architects.—Twelfth General Meeting (Ordinary). Mr. Mervyn Macartney on "Garden Architecture," illustrated by lantern views. 8 p.m.

TUESDAY, APRIL 18.

Institution of Civil Engineers. — Annual General Meeting of Corporate Members only, to receive the Report of the Council, and to elect the Council and Auditors for the ensuing year. 8 p.m.

WEDNESDAY, APRIL 19.

Edinburgh Architectural Association.—Annual Business Meeting and President's Valedictory Address. 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting of the Members. 8 p.m.

Institute of Sanitary Engineers, Ltd.—Examination and Literary Committee at 3.30 o'clock. Finance Committee at 5 o'clock. Special Council Meeting at 6 o'clock. Sessional Meeting at 7 o'clock; Paper by Mr. E. R. Palmer (Fellow), on "The Ventilating, Flushing, and Cleansing of Sewers and Drains."

APRIL 20 TO 25.

Architectural Association Camera and Cycling Club.—Easter Excursion: Hereford, etc.

SATURDAY, APRIL 22.

Edinburgh Architectural Association.—Visit to Drum House, Gilmerton.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.	
Hard Stocks.	1	10	0	per 1000 alongside, in river.
Bough Stocks and Grizzles	1	6	6	" " "
Facing Stocks ...	2	2	0	" " "
Shippers	2	2	0	" " "
Flettons	1	7	0	" at railway depôt.
Red Wire Cuts ...	1	14	0	" " "
Best Fareham Red	3	12	0	" " "
Best Red Pressed Ruabon Facing	5	0	0	" " "
Best Blue Pressed Staffordshire ...	4	2	6	" " "
Do. Bullnose	4	7	6	" " "
Best Stourbridge Fire Bricks.....	4	0	0	" " "
GLAZED BRICKS.				
Best White and Ivory Glazed Stretchers	12	0	0	" " "
Headers	11	0	0	" " "
Quoins, Bullnose, and Flats.....	16	0	0	" " "
Double Stretchers	19	0	0	" " "
Double Headers...	16	0	0	" " "
One Side and two Ends	19	0	0	" " "
Two Sides and one End	20	0	0	" " "
Splays, Chamferred, Squints	20	0	0	" " "
Best Dipped Salt Glazed Stretchers, and Header	12	0	0	" " "
Quoins, Bullnose, and Flats.....	14	0	0	" " "
Double Stretchers	15	0	0	" " "

BRICKS, &c. (*continued*).

	£	s.	d.	
Double Headers...	14	0	0	per 1000 at railway depôt.
One Side and two Ends	15	0	0	" " "
Two Sides and one End	15	0	0	" " "
Splays, Chamferred, Squints	14	0	0	" " "
Second Quality White and Dipped Salt Glazed	2	0	0	" less than best.

	s.	d.	
Thames and Pit Sand.....	7	0	per yard, delivered.
Thames Ballast.....	5	9	" "
Best Portland Cement	27	0	per ton, "
Best Ground Blue Lias Lime	20	0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime.....12s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s.	d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	" "
PORTLAND STONE (20 ft. average)—			
Brown Whitbed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2	1	" "
White Basebed, delivered on road waggons, Paddington depôt, Nine Elms depôt, or Pimlico Wharf...	2	2½	" "

	s.	d.	
Ancaster in blocks	1	11	per ft. cube, deld. rly. depôt
Beer "	1	6	" "
Greenshill "	1	10	" "
Darley Dale in blocks...	2	4	" "
Red Corsehill "	2	5	" "
CloseburnRedFreestone	2	0	" "
Red Mansfield "	2	4	" "
YORK STONE—*Robin Hood Quality.*			
Scappled random blocks	2	10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super. "
6 in. rubbed two sides ditto, ditto	2	6	" "
3 in. sawn two sides slabs (random sizes)	0	11½	" "
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	" "
1½ in. to 2 in. ditto, ditto	0	6	" "
HARD YORK—			
Scappled random blocks	3	0	per ft. cube, "
6 in. sawn two sides, landings to sizes (under 40 ft. super.)	2	8	per ft. super. "
6 in. rubbed two sides ditto	3	0	" "
3 in. sawn two sides (slabs random sizes)	1	2	" "
2 in. self-faced random flags	0	5	" "

	s.	d.	
Hopton Wood (Hard Bed) in blocks	2	3	per ft. cube. deld. rly. depôt.
" " " 6 in. sawn both sides landings	2	7	per ft. super. deld. rly. depôt.
" " " 3 in. do.	1	2½	" "

SLATES.

in.	in.	£	s.	d.	
20 × 10	best blue Bangor	13	2	6	per 1000 of 1200 at r. d.
20 × 12	" "	13	17	6	" "
20 × 10	first quality "	13	0	0	" "
20 × 12	" " "	13	15	0	" "
16 × 8	" " "	7	5	0	" "
20 × 10	best blue Portmadoc	12	12	6	" "
16 × 8	" "	6	12	6	" "
20 × 10	best Eureka unfading green .	15	17	6	" "
20 × 12	" "	18	7	6	" "
18 × 10	" "	13	5	0	" "
16 × 8	" "	10	5	0	" "
20 × 10	permanent green	11	12	6	" "
18 × 10	" "	9	12	6	" "
16 × 8	" "	6	12	6	" "

TILES.

	s.	d.	
Best plain red roofing tiles .	42	0	per 1000 at rly. depôt.
Hip and Valley tiles ...	3	7	per doz. " "
Best Brosely tiles.....	50	0	per 1000 " "
Do. Ornamental tiles	52	6	" " "
Hip and Valley tiles ...	4	0	per doz. " "
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000 " "
Do. Ornamental do	60	0	" " "
Hip tiles	4	0	per doz. " "
Valley tiles	3	0	" " "
Best Red or Mottled Staffordshire do. (Peakes).....	51	9	per 1000 " "
Do. Ornamental do.....	54	6	" " "
Hip tiles	4	1	per doz. " "
Valley tiles	3	8	" " "
Best "Rosemary" brand plain tiles.....	48	0	per 1000 " "
Best Ornamental tiles	50	0	" " "
Hip tiles	4	0	per doz. " "
Valley tiles	3	8	" " "
Best "Hartshill" brand plain tiles, sand faced.	50	0	per 1000 " "
Do. pressed.....	47	6	" " "
Do. Ornamental do	50	0	" " "
Hip tiles	4	0	per doz. " "
Valley tiles	3	6	" " "

WOOD.

BUILDING WOOD.	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in	13	10	0	15	0	0
Deals: best 3 by 9.....	13	0	0	14	0	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	0	0	12	0	0
Battens: best 2½ by 6 and 3 by 6 ..	0	10	0	less than 7 in. and 8 in.		

WOOD (*continued*).

	At per standard. £ s. d.			£ s. d.
Deals: seconds	1 0 0	less thn best.		
Battens: seconds	0 10 0	"	"	"
2 in. by 4 in. and 2 in. by 6 in.	9 0 0		10 0 0	
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0		9 10 0	
Foreign Sawn Boards—				
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.		
¾ in.	1 0 0	"		
	At per load of 50 ft.			
Fir timber: best middling Danzig or Memel (average specification)	4 10 0		5 0 0	
Seconds	4 0 0		4 10 0	
Small timber (8 in. to 10 in.)	3 12 6		3 15 0	
Small timber (6 in. to 8 in.)	3 0 0		3 10 0	
Swedish balks	2 10 0		3 0 0	
Pitch-pine timber (30 ft. average)	3 5 0		3 15 0	
JOINERS' WOOD.	At per standard.			
White Sea: first yellow deals, 3 in. by 11 in	24 0 0		25 0 0	
3 in. by 9 in.	22 0 0		23 0 0	
Battens, 2½ in. and 3 in. by 7 in.	16 10 0		18 0 0	
Second yellow deals, 3 in by 11 in.	18 10 0		20 0 0	
" " 3 in. by 9 in.	17 10 0		19 0 0	
Battens, 2½ in. and 3 in. by 7 in.	13 10 0		14 10 0	
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0		15 0 0	
Battens, 2½ in. and 3 in. by 7 in.	11 0 0		12 0 0	
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0		22 10 0	
Do. 3 in. by 9 in.	18 0 0		19 10 0	
Battens	13 10 0		15 0 0	
Second yellow deals, 3 in. by 11 in.	16 0 0		17 0 0	
Do. 3 in. by 9 in.	14 10 0		16 0 0	
Battens	11 0 0		12 10 0	
Third yellow deals, 3 in. by 11 in.	13 0 0		14 0 0	
Do. 3 in. by 9 in.	12 10 0		14 0 0	
Battens	10 0 0		11 0 0	
White Sea and Petersburg: —				
First white deals, 3 in. by 11 in.	14 10 0		15 10 0	
" " 3 in. by 9 in.	13 10 0		14 10 0	
Battens	11 0 0		12 0 0	
Second white deals, 3 in. by 11 in.	13 10 0		14 10 0	
" " 3 in. by 9 in.	12 10 0		13 10 0	
" " battens	10 0 0		11 0 0	
Pitch-pine: deals	16 10 0		20 0 0	
Under 2 in. thick extra	0 10 0		1 0 0	
Yellow Pine—First, regular sizes	40 0 0	upwards.		
Oddments	28 0 0	"		
Seconds, regular sizes	30 0 0	"		
Yellow Pine oddments	25 0 0	"		
Kauri Pine—Planks, per ft. cube	0 3 6		0 5 0	
Danzig and Stettin Oak Logs—				
Large, per ft. cube	0 3 0		0 3 6	
Small " "	0 2 6		0 2 9	
Wainscot Oak Logs, per ft. cube.	0 5 0		0 5 6	
Dry Wainscot Oak, per ft. sup. as inch	0 0 8		0 0 9	
¾ in. do. do.	0 0 7		—	
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9		0 1 0	
Selected, Figury, per ft. sup. as inch	0 1 6		0 2 6	
Dry Walnut, American, per ft. sup. as inch	0 0 10		0 1 0	
Teak, per load	17 0 0		21 0 0	
American Whitewood Planks, per ft. cube	0 4 0		0 5 0	
Prepared Flooring, etc.—	Per square.			
1 in. by 7 in. yellow, planed and shot	0 13 6		0 17 6	
1 in. by 7 in. yellow, planed and matched	0 14 0		0 18 0	
1¼ in. by 7 in. yellow, planed and matched	0 16 0		1 0 0	
1 in. by 7 in. white, planed and shot	0 12 0		0 14 6	
1 in. by 7 in. white, planed and matched	0 12 6		0 15 0	
1¼ in. by 7 in. white, planed and matched	0 15 0		0 16 6	
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0		0 13 6	
1 in. by 7 in. do. do.	0 14 0		0 18 0	
¾ in. by 7 in. white do. do.	0 10 0		0 11 6	
1 in. by 7 in. do. do. do.	0 12 9		0 15 0	

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.			£ s. d.
Rolled Steel Joists, ordinary sections	5 15 0	...	6 15 0	
Compound Girders, ordinary sections	7 5 0	...	8 7 6	
Steel Compound Stanchions	9 2 6	...	10 12 6	
Angles, Tees and Channels, ordinary sections	7 7 6	...	8 7 6	
Flitch Plates	7 15 0	...	8 5 0	
Cast Iron Columns and Stanchions including ordinary patterns	6 12 6	...	7 15 0	

METALS.

	Per ton, in London. £ s. d.		£ s. d.
IRON—			
Common Bars	7 0 0	...	7 10 0
Staffordshire Crown Bars, good merchant quality	7 10 0	...	8 0 0
Staffordshire "Marked Bars"	9 10 0	...	—
Mild Steel Bars	8 5 0	...	8 15 0
Hoop Iron, basis price	8 15 0	...	9 0 0
" " Galvanized	16 10 0	...	—
(*And upwards, according to size and gauge.)			
Sheet Iron, Black—			
Ordinary sizes to 20 g.	9 0 0	...	—
" " 24 g.	10 0 0	...	—
" " 26 g.	11 15 0	...	—
Sheet Iron, Galvanised, flat, ordinary quality—			
Ordinary sizes—6 ft. by 2 ft. to 3 ft. to 20 g.	12 10 0	...	—
Ordinary sizes to 22 g. and 24 g.	13 0 0	...	—
" " 26 g.	14 0 0	...	—
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	15 10 0	...	—
" " 22 g. and 24 g.	16 0 0	...	—
" " 26 g.	17 10 0	...	—

METALS (*continued*).

IRON—*continued*.	Per ton, in London. £ s. d.		£ s. d.
Galvanised Corrugated Sheets—			
Ordinary sizes 6 ft. to 8 ft. 20 g.	12 10 0	...	—
" " 22 g. and 24 g.	13 0 0	...	—
" " 26 g.	13 15 0	...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 0 0	...	—
Best Soft Steel Sheets, 22 g. & 24 g.	12 0 0	...	—
" " " 26 g.	13 10 0	...	—
Cut nails, 3 in. to 6 in.	9 0 0	...	9 10 0
(Under 3 in., usual trade extras.)			

LEAD, &c.

	Per ton, in London. £ s. d.		£ s. d.
LEAD—Sheet, English, 3lb. and up	15 7 6	...	—
Pipe in coils	15 17 6	...	—
Soil pipe	18 7 6	...	—
Compo pipe	18 7 6	...	—
ZINC—Sheet—			
Vieille Montagne ton	30 15 0	...	—
Silesian	30 10 0	...	—
COPPER—			
Strong Sheet per lb.	0 0 10	...	—
Thin " "	0 0 11	...	—
Copper nails "	0 0 10	...	—
BRASS—			
Strong Sheet "	0 0 9½	...	—
Thin " "	0 0 10	...	—
TIN—English Ingots "	0 1 4½	...	—
SOLDER—Plumbers' "	0 0 6½	...	—
Tinmen's "	0 0 8	...	—
Blowpipe "	0 0 9	...	—

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¾d. per ft. delivered.
" fourths	2d. " "
21 oz. thirds	3¾d. " "
" fourths	3d. " "
26 oz. thirds	4¾d. " "
" fourths	3¾d. " "
32 oz. thirds	5¾d. " "
" fourths	5d. " "
Fluted Sheet, 15 oz.	3¼d. " "
" 21 oz.	4¼d. " "
⅛ Hartley's Rolled Plate	2d. " "
1/16 " " "	2¼d. " "
¼ " " "	2½d. " "

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 1 7
" " " in barrels	"	0 1 8
" " " in drums	"	0 1 10
Boiled " " in pipes	"	0 1 9
" " " in barrels	"	0 1 10
" " " in drums	"	0 2 0
Turpentine, in barrels	"	0 3 6
" in drums	"	0 3 8
Genuine Ground English White Lead	per ton	19 15 0
Red Lead, Dry	"	19 5 0
Best Linseed Oil Putty	per cwt.	0 6 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TERMS OF SUBSCRIPTION.

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TENDERS.

*** Next week, communications for insertion under this heading must reach us *not later than* 10 *a.m.* on Wednesday, as, owing to the Easter Holidays, we go to press a day earlier than usual.

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABERTRIDWR.—For the erection of a Welsh Baptist chapel at Abertridwr. Mr. G. A. Lundie, surveyor and architect, 53, Queen-street, Cardiff:—
R. Jones, Abertridwr* £1,820

CLEETHORPES.—For street works, Grant-street, for the Cleethorpes-with-Thrunscoe Urban District Council. Mr. Egbert Rushton, Engineer and Surveyor, Council House, Cleethorpes. Quantities by Engineer:—

J. Brunton	£698 0 6	H. Mason, Cleethorpes*	£611 16 3
W. Burkitt	637 5 1		
G. W. Brown	637 0 0		

[Surveyor's estimate, £626 3s. 10d.]

COVENTRY.—For central hall scheme, for Messrs. A. Herbert, Ltd., machine tool makers. Messrs. Tait & Herbert, architects, Leicester and Coventry:—

Barnsley	£1,228	Hancox & Co.	£940
Bowen & Son	1,191	Isaac & Son*	863
Musgrave	958		

COVENTRY.—For extensions in Dale-street, for the Coventry Chain Co. Messrs. Tait & Herbert, architects, Leicester and Coventry:—

R. Wootton	£944 0	Hancox & Co.	£871 0
J. Worwood	943 0	Isaac & Sons	864 0
Kelley & Son	927 6	C. Hope	845 0
C. G. Hill	921 0	C. Garlick*	840 0
Burton & Crease	910 0		

COVENTRY.—For fettling shop extension, for Messrs. A. Herbert, Ltd., machine tool makers. Messrs. Tait & Herbert, architects, Leicester and Coventry:—

Steelwork.

A. & J. Main	£524 0 0	Blakeley & Co.	£433 18 0
Clyde Co.	479 0 0	C. Wade & Co.*	339 10 0
Needham & Lowe	459 3 10		

Builder's Work.

C. Hope	£560	Garlick's Exors.	£500
J. Worwood	547	Hancox & Co.	480
Burton & Crease	520	J. Isaac & Sons	461
R. Wootton	520	Kelley & Son*	448
C. G. Hill	510		

COVENTRY.—For alterations to two-bay castings shed, for Messrs. A. Herbert, Ltd. Messrs. Tait & Herbert, architects, Leicester and Coventry:—

Steelwork.

Needham & Lowe* £96 11 0

Builder's Work.

Isaac & Sons* £45 15 0

EAST GRINSTEAD.—For constructing a 9-in. pipe sewer, etc., in Highfield-road, for the Urban District Council. Mr. W. E. Woollam, Engineer and Surveyor to the Council:—

E. H. King	£118 0	J. G. Pickard, Turner's Hill, Sussex*	£100 0
A. C. Soan	107 15		

[Surveyor's estimate, £110.]

EAST GRINSTEAD.—For roadworks, De La Warr-road (part of), for the Urban District Council. Mr. W. E. Woollam, Engineer and Surveyor, East Grinstead:—

J. G. Pickard	£435 0	A. C. Soan	£377 4
C. & H. Gasson	427 8	H. Young, East Grinstead*	355 11
E. H. King	393 12		

[Surveyor's estimate, £393.]

EBBW VALE.—For erecting a caretaker's house, with boundary wall and out-buildings, near the Council Offices, for the Urban District Council. Mr. T. J. Thomas, Town Surveyor, Ebbw Vale:—
E. Jones, Tredegar-road, Ebbw Vale £287

ECCLES.—For the erection of a temporary school and also of permanent boundary walls and sanitary convenience in Beech-street, Winton, for the Corporation of Eccles. Mr. Bagot, architect, 134, Deansgate, Manchester. Quantities by architect:—
N. Brooke & Son, Ellesmere-street, Patricroft* £1,454 2 4

FRIERN BARNET.—For kerbing, channeling, making-up, etc., Wilton-road, for the Urban District Council. Mr. E. J. Reynolds, Surveyor:—

G. Bell	£1,659 0 0	Grounds & Newton	£1,571 10 0
Harvey Bros.	1,587 12 11	T. Adams	1,549 0 0
W. Griffiths & Co.	1,580 0 0	G. Porter, Hackney*	1,502 7 11

FRINTON-ON-SEA.—For 780 ft. lineal of 9-in. pipe sewer in Eton-road, for the Urban District Council. Mr. E. M. Bate, Surveyor, Frinton-on-Sea. Quantities by Surveyor to the Council:—

Anderson & Dowson‡	——	Wilson, Border, & Co.	£201 14 3
C. W. Killingback & Co.	£264 16 9	G. G. Rayner	199 12 2
A. E. Farr	231 18 0	A. Hudson	197 10 9
J. McKay	228 0 0	G. Wimpey & Co.	195 0 0
Z. Fairclough	219 0 0	J. Fairweather, Walton-on-the-Naze*	166 18 5
G. K. Waghorn	213 9 6		
E. Iles	209 1 0		

‡ Received too late.

GREAT YARMOUTH.—For new Higher Elementary Schools for 820 children, for the Education Committee. Messrs. Olley & Haward, architects, Great Yarmouth:—

R. Eastoe	£13,697 10 0	Youngs & Son	£12,397 0 0
Carter & Wright	13,499 0 0	F. Grimble	12,270 0 0
Moore & Son	13,150 0 0	J. D. Harman	12,199 0 0
Hawes & Son	12,900 0 0	Spencer, Santo, & Co., Felixstowe*	11,596 4 8
G. W. Beech	12,879 0 0		
A. Gunns	12,449 0 0		
G. Chastenev	12,429 0 0		

[Architect's estimate ..... £11,550.]

HARBURY (near Leamington).—For alterations, reparations, additions, and new stabling at The Hall, for Captain F. Osborne. Special estimates for plumbing, stable fittings, and flooring, etc., not included. Mr. C. M. C. Armstrong, architect, 5, High-street, Warwick:—

W. J. Bloxham	£1,903	G. F. Smith & Sons	£1,637
J. H. Cashmore	1,899	J. Hollowell	1,625
A. Kimberley	1,875	J. Parnell & Son	1,624
R. Bowen	1,791	F. Davis	1,579
E. Smith & Son	1,687	C. Hope, Berkswell*	1,464

HATHERSAGE (near Sheffield).—For five dwelling-houses and conveniences at Hathersage, near Sheffield, for Mr. Samuel Ellis. Messrs. Hall & Fenton, architects, 14, St. James's-row, Sheffield. Quantities by architects:—

C. H. Gillam	£2,415 0 0	E. B. Dyson & Son	£1,708 12 0
Malthouse & Ward	2,410 0 0	J. Reed	1,500 0 0
Martin & Hughes	2,266 0 0	W. C. Mander, Millmount-rd., Sheffield*	1,458 0 0
F. Drake	2,098 0 0	R. Charlesworth	1,438 0 0
E. Moore	2,095 0 0	G. H. May & Sons	1,375 0 0
H. White	2,090 0 0	M. Hancock	1,358 0 0
Wilson & Kenington	2,072 0 0	E. A. Symonds§	994 8 6
J. Bertram	2,000 0 0	J. H. Hodkin†	490 0 0

‡ Joiner only. § Mason only.

TENDERS.—*Continued on page* 423.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, etc., still open, but not included in this List, see previous issues.)

COMPETITIONS.

Nature of Work.	By whom Required.	Premiums.	Designs to be Delivered
*Proposed Isolation Hospital	Windsor & Egham Jt. Hospital Bd.	50*l.*	May 24

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tenders, etc., supplied by	Tenders to be Delivered
Curate's House at Belleek, Co. Fermanagh	Canon M'Kenna, P.P.	Parochial House, Pettigo	April 15
Materials, Sevenoaks	Wrotham U.D.C.	A. J. H. Powell, Surveyor, Borough-green, Sevenoaks	do.
Cloak-room, Extension to Infants' School	King's Norton and Northfield U.D.C.	A. W. Cross, Engineer & Sur., 23, Valentine-rd., King's Heath	April 17
Cast-Iron Emergency Staircase to Boys' School	do.	do.	do.
Painting Asylum Buildings, Parkside, Macclesfield	Committee of Visitors	H. Beswick, County Architect, Chester	do.
Cast-Iron Pipes, Retort Castings, etc.	Leeds Gas Committee	R. H. Townsley, Gas Offices, Leeds	do.
1,500 tons Guernsey Grey Granite	Southampton Harbour Board	J. E. Pailthorpe, Clerk to the Board	do.
Additions, etc., Royal County Hotel, Durham		G. W. Atkinson, Architect, 1, Mark lane, Leeds	do.
Materials and Carting	Glasgow Corporation	W. W. Lackie, Engineer, 75, Waterloo-street, Glasgow	do.
Cast-Iron Joint Boxes	do	do.	do.
Air-Space Telephone Cable	Kingston-upon-Hull Corporation	A. R. Bennett, Queen Anne's-chambers, Westminster, S.W.	do.
Ballybay Waterworks	Castleblayney R.D.C.	E. Bergin, Engineer, 36, Westmorland-street, Dublin	do.
Materials	March U.D.C.	C. Greenwood, Clerk, Council Offices, March, Cambs	do.
Villa Residence, Regent-street, Kingswood	Dr. C. J. Perrott	J. MacKay, Architect, Regent-street, Kingswood, near Bristol	do.
Supply and Haulage of Limestone and Gravel	Llantrisant & Llantwit Fadre R.D.C.	G. S. Morgan, Surveyor, School-street, Pontyclun	April 18
Renovating Dartmouth Wesleyan Chapel		H. Williams, St. George's-square, Dartmouth	do.
Private Street Works	Stretford U.D.C.	E. Worrall, Surveyor, Council Offices, Old Trafford, Manchester	do.
Reconstructing part of Footway, Wolverton	Stratford and Wolverton R.D.C.	A. E. Abbott, Surveyor, 3, The Square, Wolverton	do.
Stone and Ashes	Goole R.D.C.	R. Plewes, Surveyor, 40, Burlington-crescent, Goole	do.
Sewerage Works, Walmer, Kent	Walmer U.D.C.	H. W. Barker, Surveyor, Council Offices, Walmer	do.
Sixteen-Deck Spans (100 ft. in the clear)	East Indian Railway Co.	C. W. Young, Secretary, Nicholas-lane, London, E.C.	do.
Cleaning, Painting, etc., Ratcliffe Infirmary, Oxford	Committee of Management	A. C. Vargo, Secretary	April 19
Sewage Purification Works	Rathdown (No. 1) R.D.C.	P. Cunniam, Clerk's Office, Loughlinstown, Ireland	do.
Demolition of Buildings, Falkner-crescent, etc.	Bootle Parks Committee	Borough Engineer, Town Hall, Bootle	do.
Boardroom and Offices, Workhouse, Yate	Chipping Sodbury Guardians	Bernard & Son, Surveyors, Baldwin-street, Bristol	do.
House for Electric Installation, Ardgye, Alnes		J. Wittet, Architect, Elgin	do.
Earthenware Pipe Sewer, etc., Bagworth	Market Bosworth R.D.C.	W. M. Sykes, Surveyor, Chapel-street, Ibstock	do.
New Hope English Baptist Chapel, Caeran, Maesteg	Trustees	W. Beddoe Rees, Architect, 3, Dumfries-place, Cardiff	do.
Water Supply, Shafton	Hemsworth R.D.C.	T. H. Richardson, Surveyor, Hemsworth, near Wakefield	do.
900 ft. of Sewer, Chittlehampton	South Molton R.D.C.	F. Day, 9, East-street, South Molton, Devon	do.
Requisites, Parks and Cemeteries	Bradford Corporation	Town Clerk's Office, Town Hall, Bradford	do.
Station Buildings for Light Railway, Nidd Valley	do.	J. Watson, Engineer, Town Hall, Bradford	April 20
Wrought-Iron Railing and Gates, Girlington Ground	do.	J. H. Cox, City Surveyor, Town Hall, Bradford	do.
Materials, Oakham	Rutland C.C.	B. A. Adam, Clerk, Oakham	do.
Steel Poles, Overhead Line, Section Boxes, etc.	Bournemouth Corporation	F. W. Lacey, M.Inst.C.E., Municipal Offices, Bournemouth	do.
Reseatg. Church, Ballygilbert, Helen's Bay, Co. Down	Committee of Presbyterian Church	Hobart & Heron, Architects, Scottish Provident-buildings, Belfast	do.
Materials, Team Labour, etc.	Tonbridge R.D.C.	F. Harris, Engineer, Broadway, Southborough, Tunbridge Wells	April 21
Supply of 9,600 yds. of Cast-Iron Pipes	Rhondda U.D.C.	O. Thomas, Engineer, Gas and Water Offices, Pentre, Glam.	do.
Laying Pipes	do.	do.	do.
Materials and Carting	Hambledon R.D.C.	G. Lintott, Cranleigh, and S. B. Hasell, Milford, Godalming	do.
Two Houses, Huddersfield-road, Elland	Mr. J. Carter	K. Thompson, Architect, Post-office-chambers, Elland	April 22
Conversion of Schools into Fire-station, etc., N. Shields	Tynemouth Corporation	J. F. Smillie, Borough Surveyor, Tynemouth	do.
Warehouse, etc.	Willington, Co. Durham, Co-op. Soc.	R. W. Hamilton, Secretary	do.
1,200 yds. of 6-in. Sewers, Tanks, etc., Cockfield	Barnard Castle R.D.C.	R. Brown, Surveyor, Winston	do.
Alterations, etc., Wingfield Hotel, Llanbradach	Messrs. Crosswell's Brewery, Ltd.	A. O. Evans, Williams, & Evans, Architects, Pontypridd	do.
Water Supply	Wick Town Council	H. Sutherland, Town Clerk, Town Hall, Wick	do.
Making Back Towneley-street, Stanley	Stanley U.D.C.	J. Routledge, Surveyor, Council Offices, Stanley	April 24
Alterations to Balmoral Hotel, Silloth	Carlisle New Brewery Co., Ltd.	G. Armstrong, Architect, 24, Bank-street, Carlisle	do.
Alterations, etc., National Schools, Chepstow		W. H. Dashwood Caple, Architect, Church-st.-chambers, Cardiff	do.
Chapel, Moriah English Baptist Church, Abercynon	The Trustees	A. L. Thomas, Engineer, etc., Church-street-chambers, Pontypridd	do.
Alterations to Hall, Abercynon	do.	do.	do.
Steelwork, Renewal of Six Underbridges	Caledonian Railway Co.	District Engineer, 16, Killermont-street, Glasgow	do.
Road Works, St. Mary's-road	Burgess Hill U.D.C.	A. F. Hardwick, Clerk, Church-road, Burgess Hill	do.
Causewaying Glover-street	Perth Town Council	R. M'Killop, Burgh Surveyor, 12, Tay-street, Perth	April 25
Causewaying Dunkeld-road and Barrack-street	do.	do.	do.
Bentham Water Supply Works	Settle R.D.C.	T. A. Foxcroft, Engineer and Surveyor, Town Hall, Settle	do.
Oak Fence, Queen's-road School	Wimbledon Education Committee	A. Steele Sheldon, Council Offices, Wimbledon	do.
Reconstruction of Surface Paving of Street	Marsh Trustees, Newport, Salop	H. G. U. Elliott, Newport, Salop	do.
500 tons of Granite	Desborough U.D.C.	D. J. Driver, Surveyor's Office, Desborough	do.
Filter Beds and Material, Outfall Works, Water-lane	Ilford U.D.C.	H. Shaw, Surveyor, Town Hall, Ilford	do.
*Erection of Building for Stores	Edmonton U.D.C.	H. W. Dobb, Architect, Town Hall, Lower Edmonton	do.
Incandescent Mantles and Jena Chimneys	Dublin Corporation	H. Campbell, Town Clerk, City Hall, Dublin	April 26
King's Memorial Baths, Brunswick-street	Newcastle-under-Lyme Baths Com.	J. B. Langley, Architect, 49, Deansgate, Manchester	do.
Road Materials	Hoxne R.D.C	N. B. Garrard, Clerk, Hoxne, near Eye	do.
Fylingdales Water Extension (Contract A.)	Whitby R.D.C.	W. S. Gray, Clerk, 38, Flowergate, Whitby	do.
Brick Sewer	Bootle Corporation	B. J. Wolfenden, Borough Engineer, Town Hall, Bootle	do.
Branch Free Library, Oldpark-road, Belfast	Library, etc., Committee	Graeme-Watt & Tulloch, Architects, 77A, Victoria-street, Belfast	April 27
Sewers and Sewage Works, Childer Thornton, etc.	Wirral R.D.C.	F. E. Priest, Engineer, 13, Harrington-street, Liverpool	do.
Sewers and Sewage Works, East Ham Village	do.	do.	do.
Sewering, Paving, etc., Smart-street	Luton Town Council	Borough Surveyor, Town Hall, Luton	do.
Broken Granite, etc.	do.	do.	do.
1,000 tons of Broken Granite, and 50 tons of Slag	St. Neots U.D.C.	J. Edey, Surveyor, South-street, St. Neots, Hunts	do.
1,640 tons of Blue Guernsey Granite	Romford U.D.C.	Surveyor, Council Offices, Romford	do.
Fencing, etc.	Tamworth Town Council	F. E. G. Bradshaw, Borough Surveyor, 36, Aldergate, Tamworth	do.
*New Police and Fire-station in St. Leonard's-road	Borough of New Windsor T. Council	Borough Surveyor, Alma-road, Windsor	do.
*Erection of Public Library	Borough of Southend-on-Sea	Town Clerk, Town Clerk's Office, Southend-on-Sea	do.
Triple-Expansion Horizontal Pumping-Engine	Colchester Corporation	C. E. Bland, Waterworks Superintendent, Town Hall, Colchester	April 28
Multitubular Steel Boiler, etc.	do.	do.	do.
Connecting Line at Miles Platting	Lancashire & Yorkshire Railway Co.	Engineer's Office, Hunt's Bank, Manchester	do.
Bridge & Approaches over River Alyn at Rhydymwyn	Holywell R.D.C.	S. Evans, County Surveyor, County-buildings, Mold	do.
Sand Drying Apparatus	Walthamstow U.D.C.	G. W. Holmes, A.M.Inst.C.E., Town Hall Annexe, Walthamstow	do.
*Telephone Exchange at Sutton	Commissioners of H.M. Works	J. Rutherford, H.M. Office of Works, Storey's Gate, Westminster	do.
Nurses' Quarters, Swaffham Workhouse	Guardians	L. F. Eagleton, Architect, King-street, King's Lynn	April 29
Whinstone and Slag	Thirsk R.D.C.	W. Swarbreck, Clerk, Thirsk	do.
Scavenging	Gosford R.D.C.	A. Newman, Clerk, Hadleigh	do.
Timber and Concrete Pier, etc., Oban	Commissioners of Northern Lights	D. A. Stevenson, Engineer, 84, George-street, Edinburgh	May 1
Two Electric Lifts for Goods	Bristol Docks Committee	W. W. Squire, Engineer, Cumberland Basin, Bristol	do.
One Electric Passenger Lift	do.	do.	do.
Boundary Walls at Workhouse	Macclesfield Guardians	J. Wright, Architect, King Edward-street, Macclesfield	do.
Two Houses, Manchester-road, Denton		E. Woodhouse, Architect, 88, Mosley-street, Manchester	do.
Superstructure, Stanford Bridge	Worcester Highways, etc., Committee	J. H. Garrett, Bridge Warden, Shirehall, Worcester	do.
New Sewers	Salisbury Corporation	Sir A. Binnie & Sons, Engs., 9, Gt. George-st., Westminster, S.W.	do.
Additional Sewage Disposal Works	do.	do.	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be Delivered
Main Drainage, Southern Section (Contract 2)	Glasgow Corporation	City Engineer, 64, Cochrane-street, Glasgow	May 2
Refuse Destructor, Primrose Meadow, Heeley.....	Sheffield Health Committee	C. F. Wike, C.E., Town Hall, Sheffield.....	do.
*Erection of new Post-office, Salisbury	Commissioners of H.M. Works, etc.	The Postmaster, Salisbury	May 3
*Painting, General Repairs, etc., at Infirmary	St. George's Union	A. H. Newman, Workhouse, Fulham-road, S.W.....	do.
*Sewage Works.....	Lichfield R.D.C.	F. L. Tomkys, Chesterfield, near Lichfield	May 5
*Supply of Deals and Matched Boarding.....	Ordnance Survey	Officer in Charge of Stores, Ordnance Survey Office, Southampton	do.
Articles.....	Wallasey U.D.C.	Manager's Office, Egremont Ferry, Cheshire	May 8
Covered-in Steel Footbridge, Banbridge Station	Great Northern Railway Co., Ireland	W. H. Mills, Engineer, Amiens-street Terminus, Dublin	do.
*Shelter House at Seven Sisters-rd. Disinfecting Station	Metropolitan, Borough of Islington	Borough Engineer, Town Hall, Upper-street, N.	do.
New Road, Red Ridge Estate, Edmonton & Southgate	Middlesex C.C.	H. T. Wakelam, County Engr., Middlesex Guildhall, Westminster	May 10
Iron Emergency Staircase, New Beckton School....	East Ham Education Committee ..	R. L. Curtis, 11, Finsbury-square, E.C.	May 11
Electric Generating Station.....	Dublin Port and Docks Board	J. P. Griffith, Engineer, East Wall, Dublin.....	May 15
Steel Road Bridge over Walney Channel	Barrow-in-Furness Corporation	Sir B. Baker, K.C.B., 2, Queen-sq.-pl., Queen Anne's-mans., S.W.	do.
*Disinfection Station	Kensington Royal Borough Council	Borough Engineer & Surveyor, Town Hall, High-st., Kensington, W.	do.
Wesleyan Chapel, Constable Burton, near Bedale ..	.....	A. G. Dalzell, Architect, 15, Commercial-street, Halifax	No date.
Baptist Chapel, Blaenan Gwent, Abertillery	.....	N. Lewis, Architect, Oak-street, Abertillery	do.
Stand and Pavilion, etc., St. James' Park	Newcastle United Football Co.	F. G. Watt, Secretary, 10, Leazes-crescent, Newcastle-on-Tyne ..	do.
*Assembly-hall and Classrooms at Hammersmith	The Committee.....	Davidson & Phillipson, 148, Aldersgate-street, E.C.	do.
*Erection of Six Villa Residences, Sutton	.....	Worsfold & Hayward, 80, Cannon-street, E.C.	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*Clerk of Works	South Shields Corporation	Not stated	April 22
*Quantity Surveyor.....	Brentford Union	See advertisement in this issue	April 25
*Clerks of Works (2).....	Metropolitan Asylums Board.....	3*l.* 3s. per week each.....	April 26

Those marked with an (*) are advertised in this number. *Competitions*, iv. *Contracts*, iv. vi. viii. x. *Public Appointments*, xviii.

TENDERS—*Continued from page* 421.

HEELEY (Sheffield).—For sundry alterations at the Red Lion Hotel, Heeley, Sheffield, for Messrs. Thos. Rawson & Co., Ltd. Messrs. Hall & Fenton, architects, 14, St. James'-row, Sheffield. Quantities by architects:—

J. Sheppard..	£394	2 10	J. Masson	£286	15 0
G. H. May & Sons	366	15 0	H. White	275	15 0
G. Barlow ..	337	0 0	W. W. Mears..	275	15 0
H. Turton ..	319	0 0	E. Moore	274	0 0
J. H. Hodkin	312	0 0	F. Drake	271	7 0
G. Allen	302	0 0	T. Margerrison, Church-st., Dronfield*..	268	17 6
E. & W. Oxley	297	15 0			

LONDON BOARD OF EDUCATION TENDERS.

Hoxton, St. John's-road (Enlarging Boiler Room).

F. W. Belcher & Co., Ltd.....	£432	11	G. S. S. Williams & Son £345 0
A. J. Sheffield ..	379	0	McCormick & Sons 343 0
F. W. Harris & Co., Ltd.....	368	0	E. Lawrance & Sons..... 335 0
W. Shurmur & Sons, Ltd.	365	0	Stevens Bros..... 305 10
J. Grover & Son	359	0	J. Stewart, 174, West Green-rd.* 268 0

Islington, W., York-road (Re-division of Classrooms).

F. W. Belcher & Co., Ltd.....	£342	15	J. Stewart £256 0
Barrett & Power	303	0	D. H. & R. Roberts 256 0
G. S. S. Williams & Son	288	0	H. Bouneau 255 0
Stevens Bros.....	282	0	J. Grover & Son, Wilton Works, New North-road* 236 0
T. L. Green	265	0	

Wandsworth, Broadwater-road (Re-arrangement of Offices, etc.).

J. McManus.....	£237		W. Harbrow £166
R. Iles, Ltd.	203		J. Garrett & Son .. 165
Humphreys, Ltd. ..	190		A. Leather, River-bank Works, Wandsworth* 154
F. Smith & Co.	179		
T. J. Hawkins & Co.	176		

FOR PAINTING SCHOOLS.

Battersea, Ethelburga-street.

W. & C. Brown	£269		C. Gurling..... £129
Lole & Co.	187		J. Garrett & Son.... 125
E. P. Bulled & Co. ..	165		E. Triggs, 92, The Chase, Clapham*.. 109
W. Johnson & Co. ..	153		
Lathey Bros.	131		

Camberwell, N., Southampton-street.

H. Line	£211	0 0	G. Brittain.... £148 0 0
H. L. Holloway	196	0 0	J. Appleby & Sons, Cornwall Works, Lambeth* .. 140 0 0
W. Smith & Son	191	0 0	
W. King & Son	188	0 0	
W. Banks	149	17 6	
W. Sayer & Son	148	0 0	

Finsbury, C., Anne-street.

Lole & Co.	£465	0	W. Chappell £280 0
T. L. Green	338	0	Stevens Bros., Yonge-park* .. 279 0
H. Bouneau	286	10	
Vigor & Co.	280	0	

Hackney, N., Detmold-road (Old Portion and Enlargement).

W. Shurmur & Sons, Ltd.	£162	0	H. Willmott £126 0
Unsigned	146	10	Barrett & Power 126 0
R. Woollaston & Co.	135	0	G. Munday & Sons 118 0
Stevens Bros.....	135	0	J. Stewart, 174, West Green-road* 116 10

Finsbury, E., Chequer-street.

W. Martin	£265	0	Vigor & Co. £182 10
J. Haydon & Son	223	2	A. W. Derby, 60, Mayfair-avenue, Ilford* 164 0
H. Bouneau	214	12	
Stevens Bros.....	186	0	
W. Chappell	185	0	

Hackney, N., Hindle-street.

Woollaston Bros.	£218	0	J. Haydon & Sons £148 8
Unsigned	189	10	Barrett & Power, St. Thomas' Works, Hackney* 120 0
H. Willmott	175	0	
J. Grover & Son	168	0	

Hackney, S., Berger-road.

A. J. Sheffield ..	£209	0	Unsigned £133 0
A. E. Symes	164	0	A. W. Derby.... 130 0
W. Shurmur & Sons, Ltd.	147	10	Barrett & Power, St. Thomas' Works, Hackney* 115 0
J. Stewart	136	15	

Hampstead, Netherwood-street.

H. Eady	£231	0	General Builders, Ltd., Wharf-road, Notting Hill* .. £155 0
J. Peattie	187	5	F. T. Chinchen & Co..... 147 0
F. Chidley & Co., Ltd.	170	0	
W. Chappell.....	155	0	

Holborn, Rosebery-avenue.

W. Hornett	£230	0	J. R. Sims £131 0
T. D. Leng.....	168	0	T. L. Green 123 0
Holloway Bros. (London), Ltd.	165	0	F. T Chinchen & Co., Kensal Green* 99 10
J. Peattie	155	13	

Islington, N., Thornhill-road.

McCormick & Son	£180	0	F. W. Harris & Co., Ltd..... £137 0
G. S. S. Williams & Son	164	0	Marchant & Hirst 135 0
Patman & Fotheringham, Ltd...	158	10	J. Grover & Son, Wilton Works, Islington* 108 0
G. Kirby	153	0	
Stevens Bros.....	139	10	

Islington, S., Richard-street.

McCormick & Son.	£212	0	Barrett & Power.. £160 0
A. Porter	202	0	F. W. Harris & Co., Ltd. 159 0
G. Kirby	193	0	Marchant & Hirst. 154 0
Patman & Fotheringham, Ltd. ..	192	5	F. T. Chinchen & Co., Kensal Green* 140 0
Stevens Bros.	172	0	

Newington, W., Beresford-street.

W. Hornett	£397	0	Appleby & Sons . £277 0
H. J. Williams ..	317	10	Maxwell Bros., Ltd. 268 0
W. Smith & Son .	305	0	W. Sayer & Son, 86, New Kent-road* 258 10
W. V. Goad	280	0	
J. Greenwood, Ltd.	278	0	

St. George-in-the-East, Lower Chapman-street.

A. J. Sheffield ..	£325	0	J. Haydon & Sons £202 12
A. E. Symes	218	0	Vigor & Co., King-street, Poplar* 178 0
A. W. Derby	211	0	
G. Munday & Sons	204	0	

Wandsworth, "Frogmore."

W. Read	£79	0	Rice & Son £49 0
R. A. Jewell.....	70	0	C. Gurling, 36, Ethelburga-street* 39 15
Hudson Bros.	63	0	
E. B. Tucker	54	0	

LONDON.—For repairs and decorations to the Half Moon, Bow, E. Mr. H. Riches, architect, 3, Crooked-lane, King William-street, London, E.C.:—

Clemens Bros....	£165	10	J. S. Robey £147 10
Elkington & Sons	165	0	A. W. Derby* .. 120 0
T. Osborn & Sons	158	0	

LONDON.—For the erection of three shops at Putney, S.W. Mr. H. Riches, architect, 3, Crooked-lane, King William-street, London, E.C. Quantities supplied:—

H. B. Oldrey & Sons	£4,970		S. L. Soole & Son £4,600
J. Dorey & Co., Ltd.	4,875		W. R. Williams .. 4,297
H. Burman & Sons	4,822		Courtney & Fairbairn* 4,097
T. Adamson & Sons	4,750		

LONDON.—For repairs and decorations to the Prince of Wales public-house, Bethnal Green, E. Mr. H. Riches, architect, 3, Crooked-lane, King William-street, London, E.C.:—

W. Irwin	£357		Elkington & Son.... £245
T. Osborn & Sons ..	299		J. T. Robey* 228

LONDON.—For additions to Messrs. Cox & Co.'s Bank, 16, Charing-cross, S.W. Mr. H. Ling, architect, 31, Charing-cross. Quantities by Mr. G. Jackson, 9, Lebanon-gardens, S.W.:—

Hayward & Son ..	£2,697		Holloway Bros. .. £2,120
Hollingsworth	2,580		Colls & Sons* 2,112

NEWPORT.—For additions to premises of the Cardiff Pure Ice and Cold Storage Co., Shaftesbury-street. Mr. E. W. M. Corbett, architect, Castle-street, Cardiff:—

E. C. Jordan	£13,781		J. T. Partridge.... £9,349
Knox & Wells....	9,398		J. Charles 9,215

OLD PENSHAW.—For building thirty-eight houses, Houghton-le-Spring Rural District, for Messrs. A. Kirkup and S. Tulip and others. Mr. J. Palliser, architect, Philadelphia, Durham:—

J. Johnstown & Sons, Boldon Lodge, Boldon, near Sunderland*..... £6,904

PONTEFRACT.—For erecting shops and offices in Pontefract, for the Pontefract Industrial Society, Ltd. Messrs. Garside & Pennington, architects, Ropergate House, Pontefract, and Castleford:—

Gill & Sons..	£1,327	0 0	Thompson & Sons	1,127	13 0
T. H. Moverley	1,305	0 0	Jackson & Dumberline	1,125	0 0
R. Walker & Sons	1,238	9 0	H. Enndill ..	1,076	11 0
G. Spurr	1,233	14 3	A. A. Askam and others, Pontefract*	1,009	1 0
Walker & Ward	1,128	14 0			

RUSHDEN.—For the erection of a villa residence on the Knuston-road, Rushden, for Mr. J. Knight, jun., in accordance with plans, specifications, and quantities prepared by Mr. H. Knight, architect and surveyor, Newton-road, Rushden:—

Lilley & Bull ..	£1,010	0	Harrison & Winsor	£930	0
Capps, Rowley, & Keach	999	10	Whittington & Tomlin.....	925	0
G. Henson	987	0	T. Higgs	920	0
F. Henson	980	0	W. Packwood, Hacksley* ..	851	12
A. Johnson....	977	0			
Hacksley Bros.	949	0			

SPINKHILL.—For alterations and additions to the Angel Hotel, Spinkhill, near Sheffield, for Messrs. Thos. Rawson & Co., Ltd. Messrs. Hall & Fenton, architects, 14, St. James'-row, Sheffield. Quantities by architects:—

D. O'Niell & Son	£570	0 0	T. Margarrison	£511	13 6
Wellerman Bros.	567	0 0	H. White	510	0 0
J. Wright	563	11 3	Charlesworth Reeves.....	510	0 0
H. Brumby & Son	557	0 0	J. Bertram	505	0 0
E. & W. Oxley	544	15 0	W. W. Mears, Leavygreave-road, Sheffield*	497	15 0
C. Portass	537	0 0			
E. Moore	515	0 0			
F. Drake.....	512	16 0			

SHERINGHAM.—For public lavatories, cloakrooms, and promenade approach, for the Sheringham Urban District Council. Mr. T. Inglis Goldie, architect, Bank Plain, Norwich, Surveyor to the Council:—

C. A. Sadler	£2,100 0 0	H. Bullen ..	£1,850 0 0
J. W. Weston	2,002 15 0	Edwards & Utting* ..	1,809 19 1
Hannent	1,947 0 0		

[Architect's estimate, £1,800.]

SHINFIELD.—For rebuilding York Pool Bridge, Shinfield, near Reading, for the Berks County Council. Mr. J. Morris, County Surveyor, Broadway-buildings, Reading. Quantities by the County Surveyor:—

W. A. Baker & Co.....	£1,569 9 9	Rogers & Wood....	£1,098 0 0
F. Morton..	1,551 4 11	Richards & Sons	1,077 0 0
Pedrette & Co.....	1,491 0 0	W. Manders	1,077 0 0
H. W. Godwin.....	1,486 0 0	A. Thorne..	1,075 0 0
Cunningham Forbes ..	1,441 8 3	East & Hyde	1,063 0 0
J. H. Vickers	1,345 0 0	Toogood & Co.....	1,056 16 0
A. Findlay & Co.....	1,216 16 11	J. O. Brettell	1,039 0 6
Long & Allen	1,208 4 10	J. Tildesley	1,038 16 7
A. T. Catley	1,190 0 0	G. Pilgrim..	1,033 0 0
Heenan & Froude ..	1,180 0 0	E. C. & J. Keay	1,012 0 0
Woods & Moir	1,175 6 8	G. H. Tucker	952 0 0
Fulham Steel Works ..	1,150 0 0	A. J. Ellis..	950 0 0
Needham & Lowe	1,135 0 0	G. Thompson & Co.	903 12 6
A. D. Dawnay.....	1,132 2 9	C. W. Cox & Sons	900 0 0
Cleveland Bridge Co.	1,116 12 8	Parsons & Co.....	866 11 6
		E. Wheeler	848 10 0
		T. Turner, Blackwater, Hants* ..	845 4 0

[County Surveyor's estimate, £911 19s.]

SOUTHALL (Middlesex).—For making-up roads, for the Southall-Norwood Urban District Council. Mr. Reginald Brown, Engineer and Surveyor, Public Offices, Southall:—

	Beaconsfield-road (part of).			Grange-road.			Lady Margaret-road.		
	£	s.	d.	£	s.	d.	£	s.	d.
Free & Sons	816	17	8	643	3	8	813	10	0
Champness	941	1	9	743	7	6	960	8	8
Harry & Co.....	831	12	10½	671	1	10	820	6	8½
T. Watson, jun.	760	12	2	595	4	3	771	5	7
J. Macklin		—			—		926	4	9
A. & B. Hanson, Southall.....	777	0	0	602	0	0	755	0	0*
J. Mowlem & Co., London	747	0	0*	580	0	0*	760	0	0
W. Neaves	825	0	0	662	0	0	834	0	0
Bowyer		—		595	0	0	820	0	0
T. Adams	794	15	5	629	15	0	816	15	1
Harvey Bros. ..	783	6	4	616	12	0	758	8	11
C. W. Killingbeck & Co.	891	16	8	712	14	10	929	13	6
Engineer's Estimate	768	0	0	608	0	0	767	10	0

SOUTHALL.—For construction of roads and sewers on the Southall Glebe Estate, Southall, for Messrs. Baxter & Gosney. Mr. C. G. Miller, architect and surveyor, 65, Chancery-lane, W.C.:—

Neave & Son	£1,772 0 0	Killingback & Co.	£1,320 0 0
H. Morecroft	1,339 0 0	T. Adams....	1,249 0 0
A. & B. Hanson	1,325 0 0	T. Watson, jun.	1,247 17 6

SOUTHWICK (Sussex).—For private street works, Watling-road, for the Urban District Council. Mr. G. W. Warr, Surveyor, Council Offices, Southwick. Quantities by Surveyor:—

Woolgar Bros.	£276 9 4	A. C. Soan	£232 10 3
J. Parsons & Sons.....	276 0 0	E. H. King....	231 9 0
J. Whittington	248 15 6	G. Hockley, Southwick*..	227 3 0

SWANLEY JUNCTION (Kent).—For the construction of a villa residence for Mr. W. G. Burgess:—

J. Lonsdale	£1,575	Purton & Johnson, Fulwich-road, Dartford*	£1,325
W. F. Blay	1,550		
T. Ellingham & Sons	1,475		

TREDEGAR.—For erecting twenty-eight houses at Park Hill, for the Tredegar Chamber of Trade Building Club. Mr. W. Beddoe Rees, architect, 3, Dumfries-place, Cardiff. Quantities by architect:—

			Months.
Barnes, Chaplin, & Co ..	£9,566	0 0	.. 15
D. J. Vaughan	8,540	0 0	.. —
R. Edwards	8,504	0 0	.. —
J. Newcombe.....	8,212	0 0	.. 15
W. Watts	10,159	0 0	.. 14
E. P. Davies	7,905	17 6	.. —
J. Charles	8,400	0 0	.. 12
J. Davey.....	8,960	0 0	.. 10
D. W. Davies, jun.	7,840	0 0	.. 15
D. Jones	9,850	0 0	.. 12
D. Davies, sen.	8,900	0 0	.. 11

Amended Tenders on Bill of Deductions from the Five Lowest Tenderers.

J. Charles, Newport	£7,300	0 0
J. Newcombe, Tredegar	7,412	0 0
D. W. Davies, Cardiff and Tredegar *	7,224	0 0
E. P. Davies, Dowlais	7,229	13 3
D. J. Vaughan, Tredegar.....	7,549	0 0

It was decided to retain Ebbw Vale brick facing, and the tender of D. W. Davies, Cardiff and Tredegar, was accepted at £7,224.

WATH BROW.—For building a reading-room at Wath Brow, Cumberland, for the trustees of the Wath Brow Working Men's Institute. Mr. W. Dixon, Engineer and Surveyor, Cleator Gate, Cleator, Cumberland:—

H. Tinnion.....	£490	0 0
Eilbeck & Son	471	2 6
R. Pearson, Jack Trees-road, Cleator Moor*	470	0 0
Masons: Eilbeck & Son	196	0 0
Mason: S. Wilkinson.....	180	15 9
Joiner: J. Martindale	131	10 0
Joiner: J. Kelly, Cleator Moor‡	123	0 0
Plumber: J. Sumpton, Cleator Moor‡	21	8 0
Slater: T. Mandale, Maryport‡.....	33	15 0
Painter: J. B. Douglas, Egremont, Cumberland‡	9	18 6

‡ Sub-contract let out to them.

WIMBLEDON PARK.—For the erection and completion of proposed residence for Mr. E. Seton Scott. Messrs. W. E. Tutt & Co., architects and surveyors, 18, Ironmonger-lane, E.C.:—

E. J. Saunders & Co.	£2,935	Patman & Fotheringham, Ltd.....	£2,373
Leslie & Co., Ltd..	2,689	W. H. Lorden & Son	2,369
Higgs & Hill, Ltd...	2,640	J. Appleby & Sons	2,300
J. W. Brooking ..	2,573	G. Neal	2,290
J. Shelbourne & Co.	2,484	Turtle & Appleton	2,245
Knight & Son	2,381	J. Burges & Sons ..	2,200

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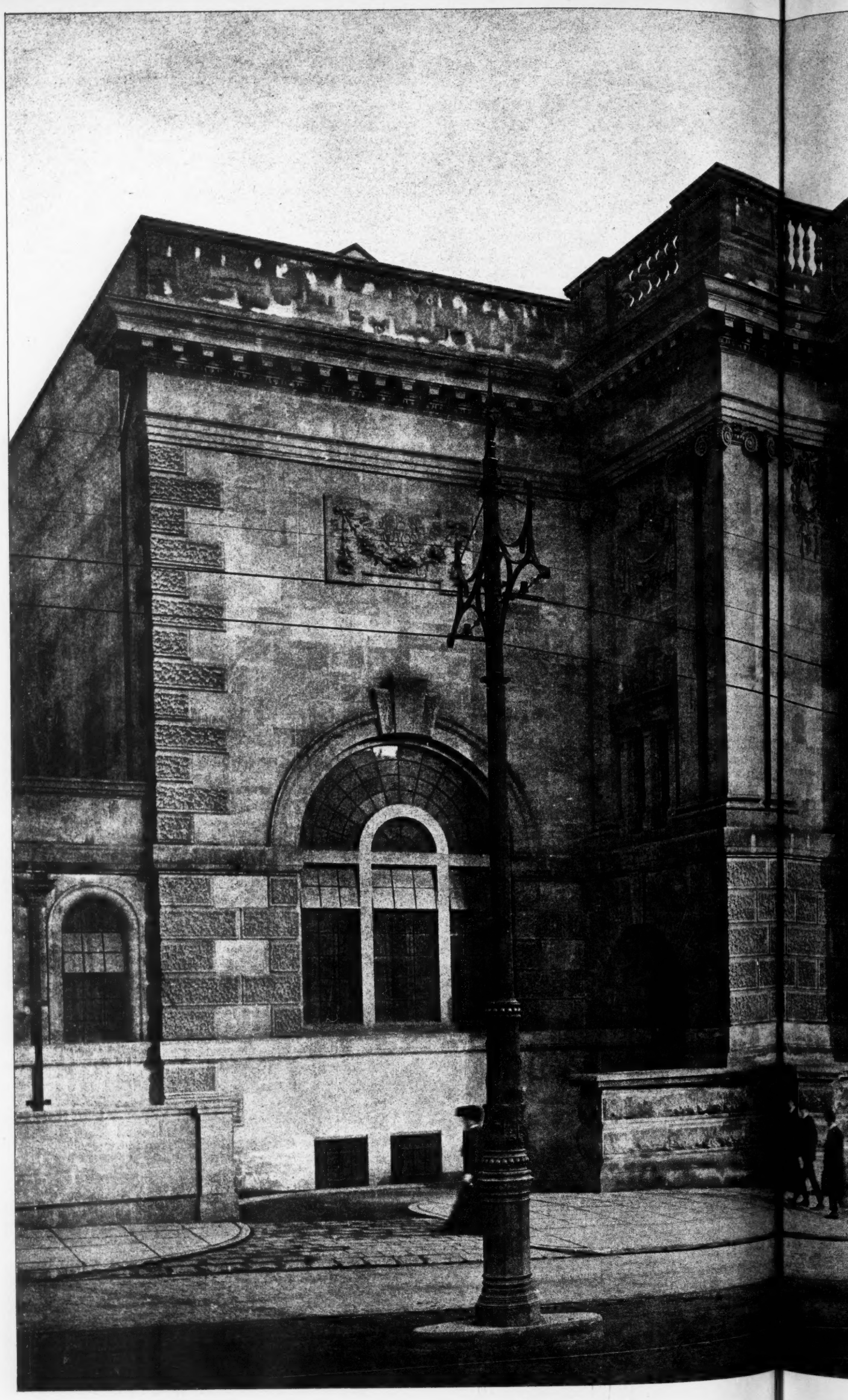

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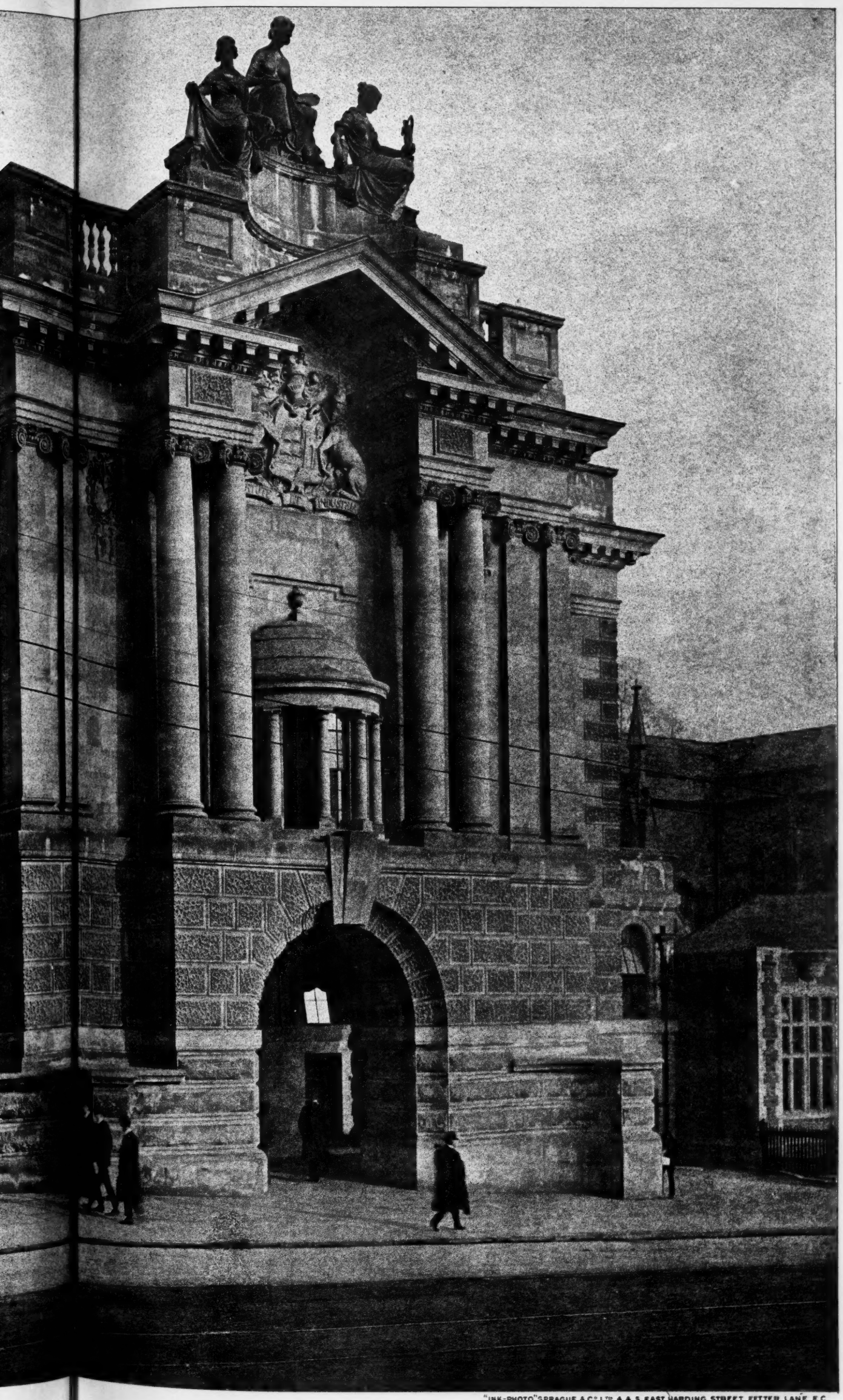

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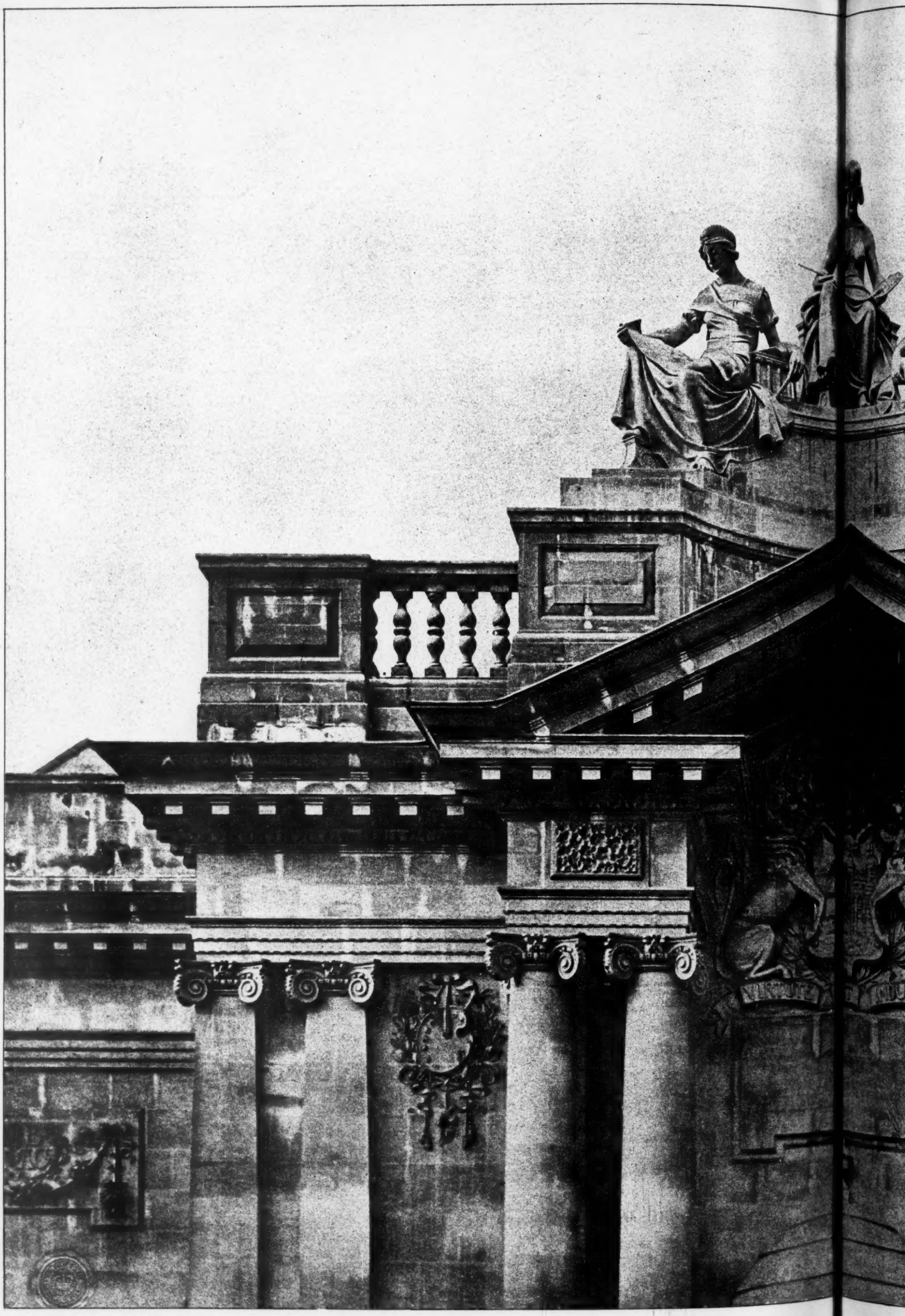

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INTERIOR VIEW.

ALLHALLOWS LOMBARD St E.C. DOOR CASING FROM WEST END.

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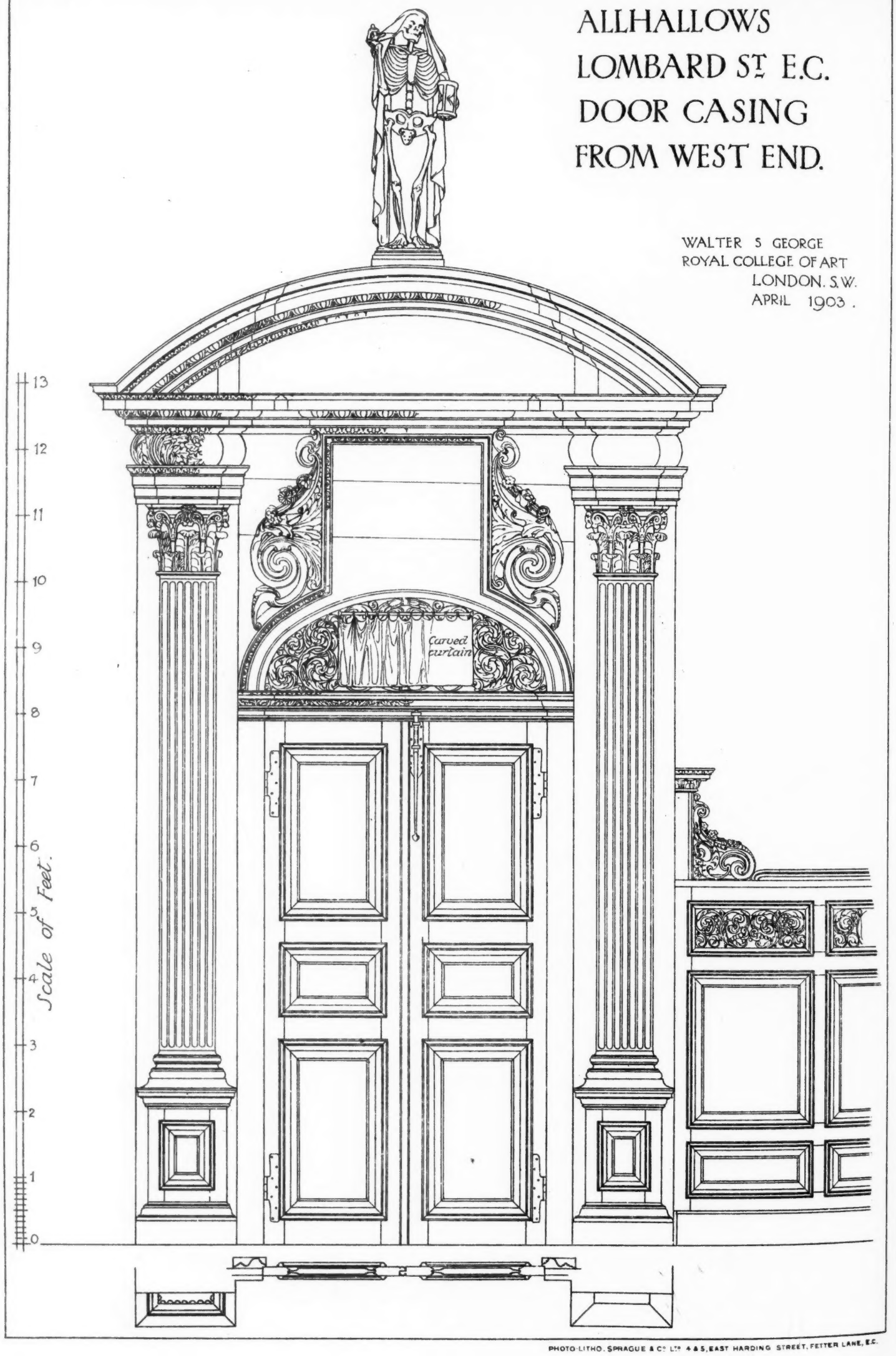

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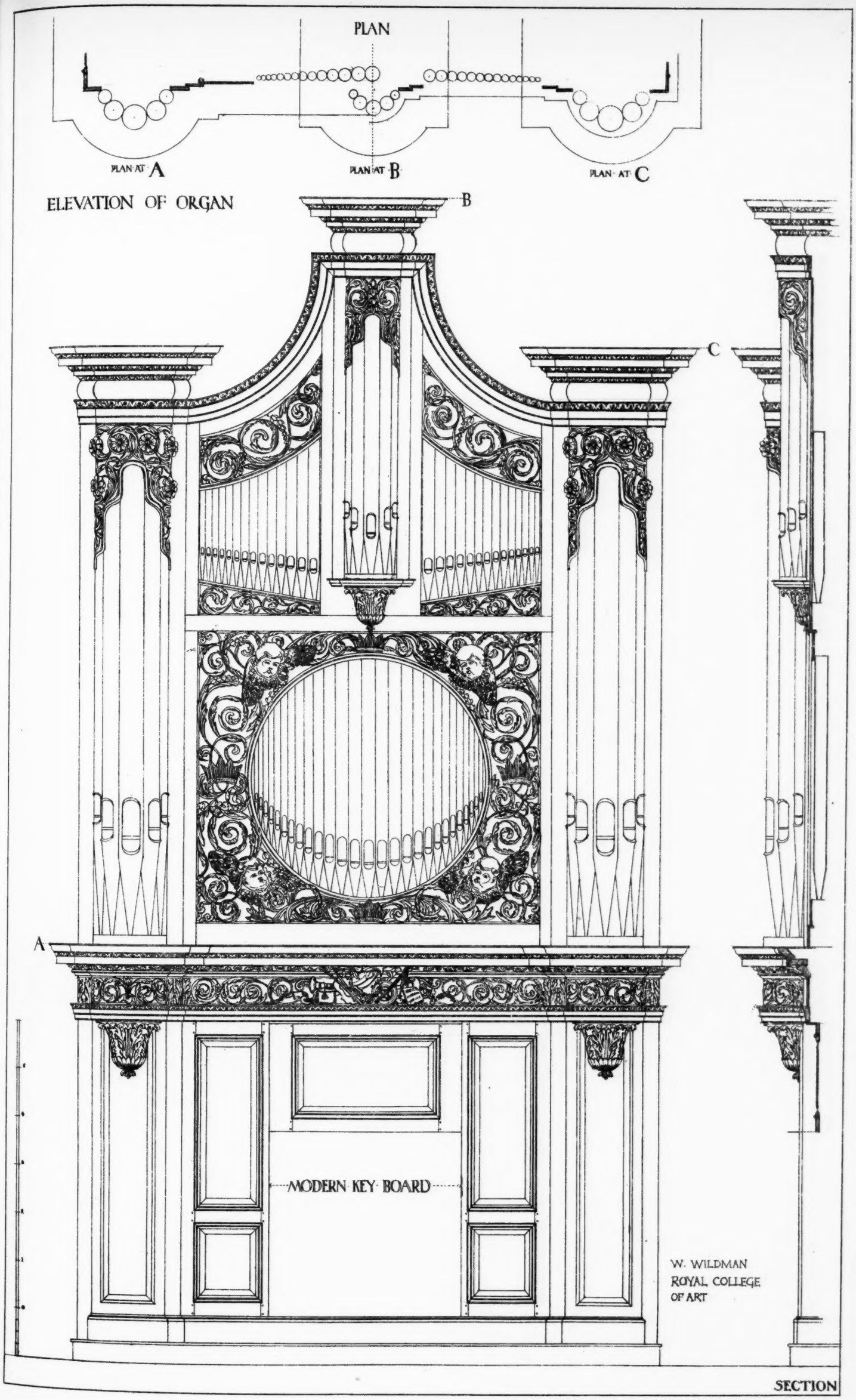

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